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CLAIMS

- 1 1. A process for altering the host range of

 2 <u>Bacillus</u> toxins which comprises recombining in vitro

 3 the variable region of two or more <u>Bacillus</u> toxin genes.
 - 2. A process, according to claim 1, wherein the Bacillus is a Bacillus thuringiensis.
 - 3. A process, according to claim 2, wherein variable regions of <u>Bacillus thuringiensis</u> var.

 <u>kurstaki HD-1</u> and <u>Bacillus thuringiensis</u> var.

 <u>kurstaki HD-73</u> are recombined in vitro to give genes encoding chimeric toxins having altered host ranges.
 - 4. DNA, denoted pEW3, encoding a chimeric toxin having pesticidal activity, as follows:

3 (start | HD-73) ATG GATAACAATC 400 CGAACATCAA TGAATGCATT VCCTTATAATT GTTTAAGTAA CCCTGAAGTA 4 GAAGTATTAG GTGGAGAAAG AATAGAAACT GGTTACACCC CAATCGATAT 500 5 TTCCTTGTCG CTAACGCAAT/TTCTTTTGAG TGAATTTGTT CCCGGTGCTG 6 GATTTGTGTT AGGACTAGTT GATATAATAT GGGGAATTTT TGGTCCCTCT 600 CAATGGGACG CATTTCTTGT ACAAATTGAA CAGTTAATTA ACCAAAGAAT 7 AGAAGAATTC GCTAGGAACC AAGCCATTTC TAGATTAGAA GGACTAAGCA 700 8 ATCTTTATCA AATTTACGCA GAATCTTTTA GAGAGTGGGA AGCAGATCCT 9 CAGTGCCCTT ACAACCGCTA TTCCTCTTTT TGCAGTTCAA AATTATCAAG TTCCTCTTTT ATCAGTATAT GTTCAAGCTG CAAATTTACA TTTATCAGTT 900 10 TTGAGAGATG TTTCAGTGTT TGGACAAAGG TGGGGATTTG ATGCCGCGAC 11 TATCAATAGT CGTTATAATG ATTTAACTAG GCTTATTGGC AACTATACAG 1000 12 ATTATGCTGT ACGCTGGTAC AATACGGGAT TAGAACGTGT ATGGGGACCG GATTCTAGAG ATTGGGTAAG GTATAATCAA TTTAGAAGAG AATTAACACT 1100 13 AACTGTATTA GATATCGTTG CTCTGTTCCC GAATTATGAT AGTAGAAGAT ATCCAATTCG AACAGTTTCC CAATTAACAA GAGAAATTTA TACAAACCCA 1200 14 15 AAGAAGTATT AGGAGTCCAC ATTTGATGGA TATACTTAAC AGTATAACCA 1300 TCTATACGGA TGCTCATAGG GGTTATTATT ATTGGTCAGG GCATCAAATA 16 ATGGCTTCTC CTGTAGGGTT TTCGGGGCCA GAATTCACTT TTCCGCTATA 1400 17 TGGAACTATG GGAAATGCAG CTCCACAACA ACGTATTGTT GCTCAACTAG GTCAGGGCGT GTATAGAACA TTATCGTCCA CTTTATATAG AAGACCTTTT 1500 18 AATATAGGGA TAAATAATCA ACAACTATCT GTTCTTGACG GGACAGAATT 19 TGCTTATGGA ACCTCCTCAA ATTTGCCATC CGCTGTATAC AGAAAAAGCG 1600' GAACGGTAGA TTCGCTGGAT GAAATACCGC CACAGAATAA CAACGTGCCA 20

CCTAGGCAGA GATTIAGICA TOSATIAGAC CATGITICAA IGITICGITC 1700 AGGCTITAGI AATAGTAGIG TAAGTATAAT AAGAGCT (end hd-73) (start HD-1) CCAACGT TITCITIGECA GCATCGCAGI 1900 GCTGAATTIA ATAATATAAT TCCTTCATCA CAAATIACAC AAATACCTIT AACAAAAATCI ACTAATCTIG GCTCTGAAAC TITCITICGTA AAGAGCAG 2000 GATTIACAGG AGGAGATATI CITCGAAGAA CTICACCTG CCAGATTICA CCACCTIAAGAG TAAATATTAC TGCACCATTA TLACACAGAGA CCACCTTAACA ACCITAACAG AAGAGCTA TAAATATTAC TAAATATTAC AATTCCATACA CAATTIACAG AATTCCATCAC GCATTICACA CAATTIACAG AGGAGACTT TAATCAGGGT AATTTTCAG CCACATTACA TCAATTGAC AATTTCACG CCGAAACTTACA TAAATCAGGT AATTTTCAGT CCGAGAACTT TAAATCAGGGT AATTTTCAGA CACATTACAA TCAATTGACG CAAATTACAG TCAATTGACA TCAATTTACAG CAACTTACAG CAACTTACAG TCAATTGACA TCAATTGACA CAACTTTACAG CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAGACTA CAACTTACAG CAACTTACAG CAACTTACAG CAACTTACAGACACACACACACAGAACTAC CAACTTACAGACACACACACACACACACACACACACACAC		-
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CTITICAAAT GGATCAAGTG TATTTACGTT AAGTGCTCAT GTCTTCAATT 2300 CAGGCAATGA AGTTTATATA GATCAAATTG AATTTGTTCC GGCAGAAGTA ACCTTTGAGG CAGAATTGA TTTTAGAAAGA GCACAAAGG CGGTGAATGA 2400 GCTGTTTACT TCTTCCAATC AAATCGGGTT AAAACAGAT GTGACGGATT ATCATATTGA TCAAGTATCC AATTTACTTG AGAGTCAAAC ATGCGAATTT 2500 TGTCTGGATG AAAACAGA ATTGTCCGAG AAAGTCAAAC ATGCGAACTG ACTTAGTGA AAAACAAGA ATTGTCCAAGA TCCAAACTTC AGAGGGATCA 2600 ATAGACAACT AGACCGGAATT TACTTCAAGA TCCAAACTTC AGAGGGATCA 2600 ATAGACAACT AGACCGGAATT TACTTCAAGA TCCAAACTTC AGAGGGATCA 2600 ATAGACAACT AGACCGGAATT TACTTCAAGA TCCAAACTTC AGAGGGATCA 2600 TGATGAGGTGC TATCCAACGT ATTTATATCA AAAAAAACAGTA TACCATCCAA GGAGGCGATG ACGTATTCAA AGAGAATTAC GTTACGCTAT TACCATCCAA GGAGGCGATG ACGTTTATAAT TCAATTACAAAAAAACAGT AGACAGTCAAA GGAAGCCTA TACCCGTTAT CAATTACGAG GGTATATCGA AGAAACAGTA AGACAGTAAAA GGACTAAGAAT TACCGGTTACT TATGACCGCCTA TACACCCCAA AGACACTTGA AGACAGTAAAA GGACTAAGAAT TGTTCGTGTAG GGAAGACATG AAACAGTAAAA GGAAGTGTGG ACGGGTTCCT TATGGCCGCTT TCAGCCCAA AGACACTCAACACCAACACACACACACACACACACACACA	27	
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ACTTAGTGAT GAGCGGAATT TACTTCAAGA TCCAAACTTC AGAGGGATCA 2600 ATAGACAACT AGACCGTGGC TGGAGAGGAA GTACGGATAT TACCATCCAA GGAGGCGATG ACGTATTCAA AGAGAATTAC GTTACGCTAT TGGGTACCTT 2700 TGATGAGGCC TATCCAACGT ATTATATACA AGAGAATGAC GGAGACTAC TACCCGTTAT TACAACGAC ATTATATACA AGAAAAAACATG AGACGAAAACATG AGACGAAAACATG AGACAACACGAAAACATG AGACACACACACACACACACACACACACACACACACAC	31	
ATAGACAACT AGACCGTGGC TGGAGAGGAA GTACGGATAT TACCATCCAA GGAGGCGATG ACGTATTCAA AGAGAATTAC GTTACGCTAT TGGGTACCTT TGATGAGGCC TATCCAACGT ATTATACA AGAAATAGAT GAGTCGAAAT TAAAAGCCTA TACCCGTTAT/CAATTAGAGA GGTATACGAA 2800 GACTTAGAAA TCTATTTAAT TCCCTACAAT GCAAAACATG AGACAGTAAA TGTGCCAGGT ACGGGTTCCT TATGGCCCCAA AGTCCAACCTGA AGTCCAACCTGA GACTTAGAAT GTTCGTGTAG GGATGGGCC CACACCTTGA ATGAATCCT GACTTAGATT GTTCCGTGTAG GGATGAGAAAAAACA AGAGATGGCCCAAGAAACATG AAACAGTAAA TGTGCCAGGT TGTTCGTGTAG GGATGAGAAAAAACA CACAACCTTA AATGAGGACCT TCATTTCTCC TTAGACCATTG ATGAGAACATTA AATGAGGACCC TCATTTCTCC TTAGACCATTG ATGAGAACATTA AATGAGGACCA AGCTCTGGTGTAG GGATCATTCT AAGAATTAGAA CCCAAAGAACAG GGAAAAACAG GAAAAAAACAAAACAAAC		
TGATGAGET ACCTATICAA AGAGAATTAC GTTACGETAT TGGGTACCTT 2700 TGATGAGTGC TATCCAACGT ATTATATCA AAAAATAGAT GAGTCGAAAT TAAAAGCCTA TACCCGTTAT CAATTAAGAG GGTATATCGA AGATAGTCAA 2800 35 GACTTAGAAAA TCTATTTAAT TCGCTCAAT GCAAAACATG AAACAGTAAA 36 GAAGTGTGG AGAGCCGAAT CCGTGCGCT TTCAGCCCAA AGTCCAATCG 2900 GAAAGTGTGG AGAGCCGAAT CGGTGCGCCC CACACCTTGA ATGGAATCCT 37 GACTTAGAAT GTTCGTGTAG GGATGAGAAA AAGTGTCCAATCG 2900 TCATTTCTCC TTAGACCATTG ATGTAGGAGA AAGTGTGCCC ATCATTCGCA 3000 TCATTTCTCC TTAGACATTG ATGTAGGATG TACAGACTTA AATGAGGACC TAGGGTATG GGTGATCTTT AAGAGTTAAAA CCGCAAGAATG GCACGCAAGA 3100 CTAGGGAATC TAGAGTTTCT OGAAGAGAAA CCATTAGTAG GCACGCAAGA 3100 TGGAATGGGA AACAAATATC GTTTAAAAGA AGGCAAAAAAGA ACCGCAAAAAAGA ACCGCAAAAAAAA	32	· · · · · · · · · · · · /
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41 GCTTTATTTG TAAACTETCA ATATGATCAA TTACAAGCGG ATACGAATAT 3300 TGCCATGATT CATGCGGCAG ATAAACGTGT TCATAGCATT CGAGAAGCTT 42 ATCTGCCTGA GCTGTCTGTG ATTCCGGGTG TCAATGCGGC TATTTTTGAA 3400 43 GAATTAGAAG GGCGTATTTT CACTGCATTC TCCCTATATG ATGCGAGAAA TGTCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500 44 AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG 46 GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	40	/ · · · · · · · · · · · · · · · · · · ·
TGCCATGATT CATGCGGCAG ATAAACGTGT TCATAGCATT CGAGAAGCTT ATCTGCCTGA GCTGTCTGTG ATTCCGGGTG TCAATGCGGC TATTTTTGAA 3400 GAATTAGAAG GGCGTATTTT CACTGCATTC TCCCTATATG ATGCGAGAAA TGTCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500 AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	<i>/</i> . 7	/
42 ATCTGCCTGA GCTGTCTGTG ATTCCGGGTG TCAATGCGGC TATTTTTGAA 3400 43 GAATTAGAAG GGCGTATTTT CACTGCATTC TCCCTATATG ATGCGAGAAA TGTCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500 44 AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG 46 GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC 49 TAGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	41	/
GAATTAGAAG GGCGTATTTT CACTGCATTC TCCCTATATG ATGCGAGAAA TGTCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500 44 AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGA TATGGAGAAG 46 GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	42	/
TGTCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500 44 AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT 45 CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGCCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG 46 GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	<i>t</i> . n	,
AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	43	
CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG 46 GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	44	/
TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG 46 GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	, -	
GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700 47 48 48 49 49 49 49 40 40 40 40 40 40 40 40 40 40 40 40 40	45	/
47 AGCAACTÉCE TAGAAGAGGA AATCTATCCA AATAACACGE TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	46	,
TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA		
48 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	4 /	
TATGAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 TAACAGAGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	48	
TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 60AACCGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	,	
50 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 51 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	49	
51 GAÁACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA	50	
GGAA (end HD-1)		
	21	GGAA (end HD-1)

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and equivalent nucleotide sequences coding for toxing EW3 with the following amino acid sequence:

M D N N P N I N E C I P Y N C L S N P E V E V L G G E R I E TFIDISLSLTQFLLSEFVPGAGF/VLGL V D I I W G I F G P S Q W D A F L V Q I E Q L I N Ó R I E E FARNQAI SRLEGLSNLYQIYAESFR'EWE PINPALREEMRIQFNDMNSALTTAIPLFAV Q N Y Q V P L L S V Y V Q A A N L H L S V L R D V S V F G Q RWGFDAATINSRYNDLTRLIGNÝTDYA GLERVWGPDSRDWVRYNQFRREL T ALFFNYDSRRYPIRTVSQL T RE N F DG 5 FRGS AQGIERŞİRSPHL N S 1 T DAHRGYYYWSGHÓIMAS PLYGIMGNAAPQQRIVAQLGQG YRRFFNIGINNQQLSVLDG SSNLF 3 A VYRKSGTVDSLDEIPP ROGE SHEL 5 HVSA FŔSGFSNSSVSI FSWOHRSAEFNAI \r P S S Q I T F T G G D I L R R T S P G Q R V R I R Y A S T T N L Q F T M S S G S N L Q S G S F R SVVKGFG/ TAPLSQRY GRFINQGNFSA Т FTTF FNFSNGSS/V/TLSAHVFNSGNE V F A E V T F E A B Y D L E R A Q K A V N E SNQIGLKTDVTD|Y | IDQ VSNLVEC LDEK@ELSEKV/K|HAKRLSDERNL L Ø. PNFR GINROLDRGWRG\S\TDTLLGTFDECYPTYLY TDIT IQGGDDV F K ENYV Ø K IDE SKLKA LRGYIEDSQDLEIYL IRYNAKHE VNVP GSLWFLSAQSPIGKC GEFNRCAPHL Ε LDC SCRDG/EKCAHHS HHFSLDIDV Т GVWVJFKIKT QDGHARLGNLEFL LVGEALARVKRAEKKWRDKREKLEWETNIV YKEAKESVDALFVNSQYDQLQADTNIAMIH AADKRVHSIREAYLPELSVIPGVNAA LEGRIFTAFSLYDARNVIKNGDFNNG NVKGHVDVEEQNNQRSVLVLPEWEAEVSQE V R V C P G R G Y I L R V T A Y K E G Y G E G C V T NNTDELKFS NCVEEEIYPNNT ٧ Τ С N Q E/E Y G G A Y T S R N R G Y NEAFSVFA D Υ EEKSYTDGRRENFCEFNRGYRDY TPLPVGY VTKELEYFPETDKVWIEIGETEGTFIVDSV ELLLMEE.

1	5. DNA, denoted pEW4, encoding a chimeric toxin
2	having pesticidal activity, as follows:
3	(start HD-1) ATGG ATAACAATCC GAACATCAAT
4	GAATGCATTC CITATAATTG TITAAGTAAC CCTGAAGTAG AAGTATTAGG 600
	TGGAGAAGA ATAGAAACTG GTTACACCCC AATCGATATT TCCTTGTCGC
5	TAACGCAATT TCTTTTGAGT GAATTTGTTC CCGGTGCTGG ATTTGTGTTA 700
6	GGACTAGTTG ATATAATATG GGGAATTTTT GGTCCCTCTC AATGGDACGC ATTTCCTGTA CAAATTGAAC AGTTAATTAA CCAAAGAATA GAAGAATTCG 800
	CTAGGAACCA AGCCATTTCT AGATTAGAAG GACTAAGCAA TCTTTATCAA
7	ATTTACGCAG AATCTTTTAG AGAGTGGGAA GCAGATCCTA CTAATCCAGC 900
8	ATTAGGAGAA GAGATGCGTA TTCAATTCAA TGACATGAAC AGTGCCCTTA
	CAACCGCTAT TCCTCTTTTG GCAGTTCAAA ATTATCAAGT TCCTCTTTTA 1000
9	TCAGTATATG TTCAAGCTGC AAATTTACAT TTATCAGTTT TGAGAGATGT
10	TICAGTETTI GGACAAAGGT GGGGATTTGA TGCCGCGACT ATCAATAGTC 1100
11	GTTATAATGA TTTAACTAGG CTTATTGGCA ACTATACAGA TTATGCTGTG
11	CGCTGGTACA ATACGGGATT AGAGCGTGTA TGGGGACCGG ATTCTAGAGA 1200
12	TTGGGTAAGG TATAATCAAT TTAGAAGAGA GCTAACACTT ACTGTATTAG
1.0	ATATEGITGE TETATTETEA AATTATØATA GTÉGAAGGTA TECAATTEGA 1300
13	ACAGTITCCC AATTAACAAG AGAAA/T/TAT ACGAACCCAG TATTAGAAAA
14	TITTGATGGI AGTITTCGTG GAAT&GCTCA GAGAATAGAA CAGAATATTA 1400
15	GGCAACCACA TCTTATGGAT ATCOTTAATA GTATAACCAT TTATACTGAT
	GTGCATAGAG GCTTTAATTA TTGETCAGGG CATCAAATAA CAGCTTCTCC 1500
16	TGTAGGGTTT TCAGGACCAG AATTCGCATT CCCTTTATTT GGGAATGCGG
17	GGAATGCAGC TCCACCCGTA CTTGTCTCAT TAACTGGTTT GGGGATTTTT 1600
	AGAACATTAT CTTCACCTTT ATATAGAAGA ATTATACTTG GTTCAGGCCC
18	AAATAATCAG GAACTGTTTG TCCTTGATGG AACGGAGTTT TCTTTTGCCT 1700
19	CCCTAACGAC CAACTTGCCT TCCACTATAT ATAGACAAAG GGGTACAGTC
-	GATTCACTAG ATGTAATACC GCCACAGGAT AATAGTGTAC CACCTCGTGC 1800
20	GGGATTTAGC CATCGATTGA GTCATGTTAC AATGCTGAGC CAAGCAGCTG
21	GAGCAGTTTA CACCTTGAGA GCTCAACGT (stop HD-1) (start HD-73) CCT ATGTTCTCTT
	GGATACATCG TAGTGCTGAA TITAATAATA TAATTGCATC GGATAGTATT 1800
22	ACTCAAATCC CTGCAGTGAA GGGAAACTTT CTTTTTAATG GTTCTGTAAT
23	TTCAGGACCA GGATTTACTG GTGGGGACTT AGTTAGATTA AATAGTAGTG 1900
2.1	GAAATAACAT TCAGAATAGA GGGTATATTG AAGTTCCAAT TCACTTCCCA
24	TEGACATETA CEAGATATES AGTTEGTGTA EGGTATGETT ETGTAACCEC 2000
25	GATTCACCIC AACGITAATI GGGGTAATIC ATCCATITIT TCCAATACAG
26	TACCAGCTAC AGCTACGTCA TTAGATAATC TACAATCAAG TGATTTTGG1 2100
20	TATTITGAÁA GIGCCAAIGC TITTACAICI ICATTAGGIA ATATAGIAGG
27	TGTTAGAÁAT TTTAGTGGGA CTGCAGGAGT GATAATAGAC AGATTTGAAT 2200
28	TTATTCÉAGT TACTGCAACA CTCGAGGCTG AATATAATCT GGAAAGAGCG
	CAGAAGGCGG TGAATGCGCT GTTTACGTCT ACAAACCAAC TAGGGCTAAA 2300
29	AACAAATGTA ACGGATTATC ATATTGATCA AGTGTCCAAT TTAGTTACGT
30	ATTATOGGA TGAATTTTGT CTGGATGAAA AGCGAGAATT GTCCGAGAAA 2400
	GTCAAACATG CGAAGCGACT CAGTGATGAA CGCAATTTAC TCCAAGATTC
31	AAATTTCAAA GACATTAATA GGCAACCAGA ACGTGGGTGG GGCGGAAGTA 2500
32	CAGGGATTAC CATCCAAGGA GGGGATGACG TATTTAAAGA AAATTACGTC
	ACACTATCAG GTACCTTTGA TGAGTGCTAT CCAACATATT TGTATCAAAA 2600
33	AATCGATGAA TCAAAATTAA AAGCCTTTAC CCGTTATCAA TTAAGAGGGT ATATCGAAGA TAGTCAAGAC TTAGAAATCT ATTTAATTCG CTACAATGCA 2700
34	ATATCGAAGA TAGTCAAGAC TTAGAATCT ATTTAHTTCG CTACAGTCS 2700
	AAALAIGAAA CAGIAAAIGI GCCAGGIACG GGIICCIIAI GGGGGGIIII
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36	AGCCCAAAGT	CCAATCGGAA	AGTGTGGAGA			2800
	ACCTTGAATG	GAATCCTGAC	TTAGATTGTT	CGTGTAGGGA	TGGAGAAAAG	
37	TGTGCCCATC	ATTCGCATCA	TTTCTCCTTA	GACATTGATG	TAGĢÁTGTAC	2900
38	AGACTTAAAT	GAGGACCTAG	GTGTATGGGT	GATCTTTAAG	ATTAAGACGC	
	AAGATGGGCA	CGCAAGACTA	GGGAATCTAG	AGTTTCTCGA	AGAGAAACCA	3000
39	TTAGTAGGAG	AAGCGCTAGC	TCGTGTGAAA	AGAGCGGAGA	AAAAATGGAG	
40	AGACAAACGT	GAAAAATTGG.	AATGGGAAAC	AAATATCGTT	TATAAAGAGG	3100
40	CAAAAGAATC	TGTAGATGCT	TTATTTGTAA	ACTOTOMATA	TGATCAATTA	
41	CAAGCGGATA	CGAATATTGC	CATGATTCAT	GCGGCAGATA	AACGTGTTCA	3200
42	TAGCATTCGA	GAAGCTTATC	TGCCTGAGCT	GTCTGTGATT	CCGGGTGTCA	
42	ATGCGGCTAT	TTTTGAAGAA	TTAGAAGGGC	GTATTTTCAC	TGCATTCTCC	3300
43	CTATATGATG	CGAGAAATGT	CATTAAAAAT	GGTGATTTTA	ATAATGGCTT	
1.1	ATCCTGCTGG	AACGTGAAAG	GGCATGTAGA	TGTAGAAGAA	CAAAACAACC	3400
44	AACGTTCGGT	CCTTGTTGTT	CCGGAATGGG	AAGCAGAAGT	GTCACAAGAA	
45	GTTCGTGTCT	GTCCGGGTCG	TGGCTATATC	CTTCGTGTCA	CAGCGTACAA	3500
1.6	GGAGGGATAT	GGAGAAGGTT	GCGTAACCAT	TCATGAGATC	GAGAACAATA	
46		GAAGTTTAGC	AAC/TBEGTAG		CTATCCAAAT	3600
47		CGTGTAATGA	TTATACTETA	AATCAAGAAG	AATACGGAGG	
			GAGGATATAA	CGAAGCTCCT	TCCGTACCAG	3700
48		GTCAGTCTAX	GAAGAAAAAT	CGTATACAGA	TGGACGAAGA	
49		GTGAATTTAA	CAGAGGGTAT	AGGGATTACA	CGCCACTACC	3800
7)		GTGACAAAAA	AATTAGAATA	CTTCCCAGAA	ACCGATAAGG	
50		GATTGGAGAA	ACGGAAGGAA		GGACAGCGTG	3900
F 1		TTATGGAGGA	A (end HD-7		COMORAGO	_,
51	GHHITALILL	THIOGHOOM	H (END MIL)	31		

and equivalent nucleotide sequences coding for toxin EW4 with the following amino acid sequence:

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MDNNFNINECIPYNCLS
                     NP
                       EVEVLGGE
TGYTPIDISLSLTQFLLSEFVPGAGFVL
 DIINGIFGPSQWDAFPVQIEQLINQR
 ARNOAISRLEGLSNLYQIYAESFREW
 TNPALREEMRIQFNDMNSALTTAIP/LLAV
@ N Y @ V P L L S V Y V @ A A N L H L S V L R D V
                                ٧
RWGFDAATINSRYNDLTRLIGNYTD/YAVRW
YNTGLERVWGPDSRDWVRYNQFRR
LDIVALFSNYDSRRYPIRTVSQL7
PVLENFDGSFRGMAQRIEQNIRQ/P
                             HL
       TDVHRGFNYWSGHQIT
                           Á, S
       LFGNAGNAAPPVLVSĻ
                           T
                            G
 SSFLYRR
          IILGSGPNNQELF/VLDGT
A S L T T N L P S T I Y R Q R G T V D S L D V I P P
  FRAGFSHRLSHVTMLSQA/AGAV
    SWIHRSAEFNNIIAS/ÓSIT
                            Q
    NGSVISGPGFTGADL VRLNS
                             S
                              G
                               NNIQ
NRGYIEVPI/HFPSTS
                   FY/RVRVR
                            YASVT
HLNVNWGNSSIFSNT,
                     ÁTATSLDNLQ
      S
       ANAFTSSLØ/NJ.
                     VGVRNFS
       IPVTATLE A E YNLE RAQKAV
GLKTNVTD/Y HIDQVSNLVTY
    EFIPVT
TSTNQL
                                 SDE
FCLDEKRELSEK V K/H/A K
                     RLSDERNLL
FKDINRQPERGW66|$
                  TGIT
                       IQGGDDVFKEN
YVTLSGTFDECYPT
                 ÝLYQKIDESKLKAF
YQLRGYIEDSQDLÉ
                  ΥL
                 I
                     Ι
                     R
                       YNAKHET
GTGSLWFL
         SAQSP/IGKC
                             PHL
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                       FNRCA
PDLDCSCRDGEK
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               AHHSHHFSLDIDVGCTD
LNEDLGVWVIFK/IKTQDGHARLGNL
  LVGEALARVKRAEKKWRDKR
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I V Y K E A K E S V D/A L F V N
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IHAADKRVHSÆREAYLPELSVIPGVN
EELEGRIFTA/FSLYDARNVIKNG
                           DFNNGL
CWNVKGHVD / EEQNNQRSVLVVPEWEA
QEVRVCFGR/GYILRVTAYKEGYGEGC
   NNTDELKFSNCVE
                       YFNNT
                   Ε
                    Ε
                     Ι
TVNQEEY6/GAYTSRNRG
                    YNEAPSVPADYAS
   EKSY T DGRRENFCEFNRGYRDYTPLPV
GYVTKEL/EYFPETDKVWIEIGETEGTFIVD
SVELLLMEE.
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6. DNA, denoted pACB-1, encoding a chimeric toxin, having pesticidal activity, as follows:

		\ (start	HD-73)	ATG	GATAACAATÇ	400
	CGAACATCAA	TGAATGCATT	CCTTATAATT	GTTTAAGTAA	CCCTGAAGYA	
		GTGGAGAAAG			CAATCGATAT	500
		CTAACGCAAT			,	
		AGGACTAGTT			TEGTECCTCT	600
		CATTTCTTGT			ACCAAAGAAT	
		GCTAGGAACC			/	700
		AATTTACGCA			AGCAGATCCT	700
		CATTAAGAGA				BOO
		ACAACCGCTA	TTCCTCTTTT	,		800
	TTCCTCTTTT		GTTCAAGCTG	TGCAGTTCAA		000
	TTGAGAGATG			,		700
			TGGACAAAGG	,	ATGCCGCGAC	1000
		CGTTATAATG		/	AACTATACAG	1000
	ATTATGCTGT		AATACGGGAT	TAGAACGTGT	ATGGGGACCG	
		ATTGGGTAAG		/	AATTAACACT	1100
		GATATCGTTG		GAATTATGAT		
	the second secon		CAATTAACAA	/	TACAAACCCA	1200
		ATTTTGATGG	,	/GGCTCGGCTC	AGGGCATAGA	
					AGTATAACCA	1300
		TGCTCATAGG	GGTJATTATT	. ATTGGTCAGG		
	ATGGCTTCTC	CTGTAGGGTT	TTÆGEGGCÇA	GAATTCACTT	TTCCGCTATA	1400
	TGGAACTATG	GGAAATGCAG	CTCCACAACA	ACGTATTGTT	GCTCAACTAG	
	GTCAGGGCGT	GTATAGAACA	VTATĆGTC¢A	CTTTATATAG	AAGACCTTTT	1500
	AATATAGGGA	TAAATAATCA	ACAACTATCT	GTTCTTGACG	GGACAGAATT	
	TGCTTATGGA	ACCTCCTCAA	ATTABCCATC	CGCTGTATAC	AGAAAAAGCG	1600
	GAACGGTAGA		1/1	CACAGAATAA		
		AATTTAGTCA/	v /	CATGTTTCAA		1700
		AATAGTAGTÉ	TAAGTATAAT		nd hd-73)	
	(start	,			GCATCGCAGT	1900
		ATAATATAAT		CAAATTACAC		
		ACTAATCTTG			AAAGGACCAG	2000
	GATTTACAGG			CTTCACCTGG		
		TAAATATTAC	TGCACCATTA		ATCGGGTAAG	2100
		GCTTCTACTA			TCAATTGACG	
	· · · · · · · · · -	TAATCAGGGT		CAACTATGAG	TAGTGGGAGT	2200
	AATTTACAGT	•	•		CTCCGTTTAA	
	CTTTTCAAAT					2300
		AGTTTATATA		AATTTGTTCC	_,	
	, , , , ,		TTTAGAAAGA		CGGTGAATGA	2400
		TCTTCCAATC				
					AGATGAATTT	2500
		AAAAACAAGA				
					AGAGGGATCA	2600
		AGACCGTGGC				
					TGGGTACCTT	2700
	/. · ·	TATCCAACGT				_, ••
					AGATAGTCAA	2800
/		TCTATTTAAT				
.*					AGTCCAATCG	2800
		AGAGCCGAAT				2700
						3000
					ATCATTCGCA	3000
	ICALITOTEC	TTAGACATTG	AIGIAGGAIG	TALAGACTTA	HH I GHGGALL	

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55	TAGGTGTATG	GGTGATCTTT	AAGATTAAGA	CGCAAGATGG	GCACGCAAØA	3100
56	CTAGGGAATC	TAGAGTTTCT	CGAAGAGAAA	CCATTAGTAG	GAGAAGCØCT	
57	AGCTCGTGTG	AAAAGAGCGG	AGAAAAAATG	GAGAGACAAA	CGTGAAAAAT	3200
58	TGGAATGGGA	AACAAATATC	GTTTATAAAG	AGGCAAAAGA	ATCTG/AGAT	
59	GCTTTATTTG	TAAACTCTCA	ATATGATCAA	TTACAAGCGG	ATACMAATAT	3300
60	TGCCATGATT	CATGCGGCAG	ATAAACGTGT	TCATAGCATT	CGAGAAGCTT	
61	ATCTGCCTGA	GCTGTCTGTG	ATTCCGGGTG	TCAATGCGGC	TATTTTGAA	3400
62	GAATTAGAAG	GGCGTATTTT	CACTGCATTC	TCCCTATATG	AZGCGAGAAA	
63	TGTCATTAAA	AATGGTGATT	TTAATAATGG	CTTATCCTGC	#GGAACGTGA	3500
64	AAGGGCATGT	AGATGTAGAA		ACCAACGTTC/	GGTCCTTGTT	
65	CTTCCGGAAT	GGGAAGCAGA		. /	TCTGTCCGGG	3600
66	TOGTGGCTAT	ATCCTTCGTG	TCACAGCGTA	CAAGGAGGA	TATGGAGAAG	
67	GTTGCGTAAC		ATCGAGAACA	ATACAGACGA	ACTGAAGTTT	3700
68	AGCAACTGCG		AATCTATCCA	,	TAACGTGTAA	
69	TGATTATACT		AAGAATACGG	AGGTGCGTAC	ACTTCTCGTA	3800
70		TAACGAAGCT	CCTTCCGTAC	CAGCTGATTA	TGCGTCAGTC	
70 71	TATGAAGAAA	AATCGTATAC	AGATGGACGA	AGAGAGAATC	CTTGTGAATT	3900
72	TAACAGAGGG	TATAGGGATT	ACACGCCACT	ACCAGTTGGT	TATGTGACAA	
73		ATACTTCCCA	GAAACCGATA	AGGTATGGAT	TGAGATTGGA	4000
			CGTGGAÇAGC/	<i>y</i>		
74	GGAA (end h			3,03,171,110	. 55	
75	CONH (ENG F	10-17	/ / /			

and equivalent nucleotide sequences coding for toxin ACB-1 with the following amino acid sequence:

MDNNPNINE ÉIPYNCLSNPEVEVLGGERIE TGY"TP1DIS/LSLTQFLLSEFVPGAGFVLGL QLINQRIEE WDAFLVQIE VDIIWGIF GPSQWDAF FARNQAIS RLEGLSNL YQIYAESFREWEAD TNFALR/EEMRIQFNDMNS Α L TTAIP QNYQVPLLSVYVQAANLHLSVLRDVSVFGQ W G F D A A T I N S R Y N D L T R L I G N Y T D Y A V R W YNTGLÆRVWGF DSR DWVRYNQFRRELT DIV 9/LFFNYDSRRYFIRTVS TREI Q L VLE/NFDGSFRGSAQGIERSIRSPHLMDIL NSI TI Y T D A H R G Y Y Y W S G H Q I M A S P V G F S G PEF/TFPL Y.G.TMGNAAPQQRIVAQLGQGVYR STLYRRPFNIGINNQQLS V L D G TLŞ TSSNLPSAVYRKSGTVDSLNEIPPQNNNV PRQEFSHRLSHVSMFRSGFSNSSVSIIRA TFSWQHRSAEFNNIIPSSQITQIPLTKST TGGDILRRTSPGQ LGSGTSVVKGPGF RVNITAPLSQRYRVRIRYAS TTNLQFHTS /I D G R P I N Q G N F S A T M S S G S N L Q S G S F R T V G

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FTTPFNFSNGSSVFTLSAHVFNSGNEV/Y I D
 97
          FVPAEVTFEAEYDLERAQKAVNE / FTS
 98
      RIE
      SNQIGLKTDVTDYHIDQVSNLVECLS/D
                                            E F C
 99
      L D E K Q E L S E K V K H A K R L S D E R N L L Q Ø P N F R
100
      GINRQLDRGWRGSTDITIQGGDDVF/KE
101
          GTFDECYPTYLYQKIDESKLKÁYTRYQ
102
                       IYLIRYNAKHET/
                                       \vee N V
      LRGYIEDSQDLE
103
      G S L W F L S A Q S F I G K C G E F N R C A P / L E
                                          WNPD
104
      LDCSCRDGEKCAHHSHHFSLDID/VG
                                         С
                                          TDLN
105
      EDLGVWVIFKIKTQDGHARLGN/LEF
106
      LVGEALARVKRAEKKWRDKREK
                                    LEWE
107
      YKEAKESVDALFVNSQYDQLQ/ADTNI
                                          AMIH
108
      AADKRVHSIREAYLPELSVI F G V N A
LEGRIFTAFSLYDARNVIK N G D F N N
                                          I
109
                                         G
110
      N V K G H V D V E E Q N N Q R S V L V/L P E W E A E V S Q E
111
      VRVCPGRGYILRVTAYKE, GYGEGCV
112
      ENNTDELKFSNCVEEEIYPNNTVTC
113
      NQEEYGGAYTSRNRGYNEAPSVPAD
                                         YASVY
114
      EEKSYTDGRRENPCEFXRGYRDYTP
                                         LP-VGY
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116
      VTKELEYFPET DKVWI/EIGETEGTF
      ELLLMEE.
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7. DNA, denoted pSYW1, encoding a chimeric toxin, having pesticidal activity, as follows:

3		(start/	HD-73)	ATG	GATAACAATC	400
4	CGAACATCAA T	GAATGCA7T	CCTTATAATT	3		
5	GAAGTATTAG G	STGGAGAAAG	AATAGAAACT	GGTTACACCC	CAATCGATAT	500
6	TTCCTTGTCG C	CTAACGCAAT	TTCTTTTGAG	TGAATTTGTT	CCCGGTGCTG	
7	GATTTGTGTT A	AGGAÇTAGTT	GATATAATAT	GGGGAATTTT	TESTCCCTCT	600
8	CAATGGGACG C	CATYTCTTGT	ACAAATTGAA	CAGTTAATTA	ACCAAAGAAT	
9	AGAAGAATTC G	SCTAGGAACC	AAGCCATTTC	TAGATTAGAA	GGACTAAGCA	700
10	ATCTTTATCA A	ATTTACGCA	GAATCTTTTA	GAGAGTGGGA		
11	ACTAATCCAG C	ATTAAGAGA	AGAGATGCGT	ATTCAATTCA	ATGACATGAA	800
12	CAGTGCCCTT A	CAACCGCTA	TTCCTCTTTT	TGCAGTTCAA		
13	TTCCTCTTTT A	TCAGTATAT	GTTCAAGCTG	CAAATTTACA	TTTATCAGTT	900
14	TTGAGAGATG T	TTCAGTGTT	TGGACAAAGG	TGGGGATTTG	ATGCCGCGAC	
15	111101111111			GCTTATTGGC	111.011111111111	1000
16	ATTATØCTGT A		AATACGGGAT		ATGGGGACCG	
17	GATTØTAGAG A	TTGGGTAAG	GTATAATCAA	ITTAGAAGAG	HH, 1111101101	1100
18	AACTGTATTA G	ATATCGTTG	CTCTGTTCCC	GAATTATGAT	AGTAGAAGAT	
19	ATCCAATTCG A	ACAGTTTCC		GAGAAATTTA		1200
20	GTATTAGAAA A	TTTTGATGG	TAGTTTTCGA	GGCTCGGCTC		
21	AGGAAGTATT A	GGAGTCCAC	ATTTGATGGA	TATACTTAAC	AGTATAACCA	1300
22	/TCTATACGGA T	GCTCATAAA	GGGGAATATT	ATTGGTCAGG	GCATCAAATA	
23	ATGGCTTCTC C	TGTAGGGTT	TTCGGGGCCA	GAATTCACTT		1400
24	TGGAACTATG G	GAAATGCAG	CTCCACAACA	ACGTATTGTT	GCTCAACTAG	
25	GTCAGGGCGT G	TATAGAACA	TTATCGTCCA	CTTTATATAG	AAGACCTTTT	1500
26	AATATAGGGA T	AAATAATCA	ACAACTATCT	GTTCTTGACG	GGACAGAATT	

27	TGCTTATGGA	ACCTCCTCAA	ATTTGCCATC	CGCTGTATAC	AGAAAAAGCG	1600
27 28		TTCGCTGGAT				
29		GATTTAGTCA			,	1700
30		AATAGTAGTG			,	
31		HD-1)		TTTCTTGGCA		1900
32		ATAATATAAT			AAATACCTTT	
33	AACAAAATCT		GCTCTGGAAC		AAAGGACCAG	2000
34		AGGAGATATT			,	
35	ACCTTAAGAG	•	TGCACCATTA	*	/	2100
36	AATTCGCTAC			ATTECATACA	TCAATTGACG	
		TAATCAGGGT			TAGTGGGAGT	2200
37 38		CCGGAAGCTT		,	CTCCGTTTAA	2200
				/	GTCTTCAATT	2700
39		GGATCAAGTG		AAGTGCTCAT	GGCAGAAGTA	2300
40		AGTTTATATA	· ·	,		2400
41		CAGAATATGA		/	CGGTGAATGA	2400
42	GCTGTTTACT		AAATCGGGTT	AAAACAGAT	GTGACGGATT	5500
43		TCAAGTATCC		AGTGTTTATC	AGATGAATTT	2500
44		AAAAACAAGA		,	ATGCGAAGCG	
45	ACTTAGTGAT		TACTTCAAGA	TCCAAACTTC	AGAGGGATCA	2600
46	ATAGACAACT	AGACCGTGGC	TGGAGAGGAA	GTACGGATAT	TACCATCCAA	
47	GGAGGCGATG	ACGTATTCAA	AGAGAATTAC	GTTACGCTAT		2700
48	 TGATGAGTGC 	TATCCAACGT	ATTATATCA	AAAAATAGAT		
49		TACCCGTTAT		GGTATATEGA		2800
50	GACTTAGAAA	TCTATTTAAT		GCAAAACATG		
51	TGTGCCAGGT	ACGGGTTCCT		TTCAGCCCAA		2900
52	GAAAGTGTGG	AGAGCCGAAT	CEATGCGCGC	CACACCTTGA	ATGGAATCCT	
53	GACTTAGATT	GTTCGTGTAG	GGATGGAGAA	AAGTGTGCCC	ATCATTCGCA	3000
54	TCATTTCTCC	TTAGACATTG	ATOTAGGATG	TACAGACTTA	AATGAGGACC	
55	TAGGTGTATG	GGTGATCT/TT	ARGATTAAGA	CGCAAGATGG	GCACGCAAGA	3100
56	CTAGGGAATC	TAGAGTTXCT	CGAAGAGAAA	CCATTAGTAG	GAGAAGCGCT	
57	AGCTCGTGTG	AAAAGAGCGG	AGAAAAAATG	GAGAGACAAA	CGTGAAAAAT	3200
58	TGGAATGGGA	AACAAÁTATC	GTTTATAAAG	AGGCAAAAGA	ATCTGTAGAT	
59	GCTTTATTTG	TAAĄĆTCTCA	ATATGATCAA	TTACAAGCGG	ATACGAATAT	3300
60	TGCCATGATT	CATGCGGCAG	ATAAACGTGT	TCATAGCATT	CGAGAAGCTT	
61	ATCTGCCTGA	GETGTCTGTG	ATTCCGGGTG	TCAATGCGGC	TATTTTTGAA	3400
62	GAATTAGAAG	ÉGCGTATTTT	CACTGCATTC	TCCCTATATG	ATGCGAGAAA	
63	TGTCATTAAA	AATGGTGATT	TTAATAATGG	CTTATCCTGC	TGGAACGTGA	3500
64	AAGGGCATGT			ACCAACGTTC	GGTCCTTGTT	
65		GGGAAGCAGA	AGTGTCACAA	GAAGTTCGTG	TCTGTCCGGG	3600
66	TEGTGGETAT	ATCCTTCGTG	TCACAGCGTA	CAAGGAGGGA	TATGGAGAAG	
67	GTTGCGTAAC	CATTCATGAG	ATCGAGAACA	ATACAGACGA	ACTGAAGTTT	3700
68		TAGAAGAGGA				
	TEATTATACT	GTAAATCAAG	AARAATACER	ARGTECETAC	ACTICICATA	3800
69	OTECOCECTA	TAACGAAGCT	CCTTCCCTAC	CACCTEATIA	TECETCASTC	
70	TOTCOOCOO	AATCGTATAC	ACATEGACGA	VEVEVEVOTE.	CITGIGACT	3900
71		TATAGGGATT				3 ,00
72	00000TT000	ATACTTCCCA	HUHUGUUHU!	ACCHO!!GG!	TEQEATTEEN	4000
73	HHUHHIIAGA	GAACATTTAT		CTCCATTAC	TCCTTATEEA	-,000
74			LG I GGHLHGL	GIGGHHIIRC	ICCITATOGA	
75	/ GGAA (end h	ו ז – ער				

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and equivalent nucleotide sequences coding for toxin
SYWl with the following amino acid sequence:

M D N N P N I N E C I P Y N C L S N P E V E V L G Ø E R I E TGYTPIDISLSLTQFLLSEFVPGAGFVLGL VDIIWGIFGPSQWDAFLVQIEQLI/NQRIEE FARNQAISRLEGLSNLYQIYAES FREWEAD TNPALREEMRIQFNDMNSALT T QNYQVPLLSVYVQAANLHLSVL/RDVS R W G F D A A T I N S R Y N D L T R L I G N Y T D Y YNTGLERVWGPDSRDWVRYNQ/FRRE L D I V A L F P N Y D S R R Y P I R T V / S Q L T R E YTN I PVLENFDGSFRGSAQGIE<u>G</u>SIRSPHLM NSITIYTDAH KGEYYWSG H/QIMASP V G LYGTMGNAAPQQÁIVAQLGQG PEFTFP LSSTLYRRPFNIGINNQQLS TEFAY VL D G Т GTSSNLPSAVYRKSGTVDSLDEIPPQN PPRQGFSHRLSHVSMFRSGFSNSSVSI SVSIIRA TFSWQHRSAEFNN I/I/PS/SQ ITQIPLTKST T/6-8 DILRR SGTSVVKGPG# TSP NLG LRVNITAPLSQRYR **X**RIRYAS Т T N'L IDGRPINQGNFSA/T/MSSGSNLQ FTTPFNFSNGSSVFTLSAHVFN SGS FR TLSAHVFNSGNEV RIEFVPAEVTFEAEYDLERAQKAVNEL T SNQIGLKTDVTD/YHIDQVSNLVECLSDEFC DEKQELSEKVKHAKRLSDERNLLQDPNFR GINR Q L D F G W R/G S T D I T I Q G G D D V F K E TLLGTFDECY/PTYLYQKIDESKLKAYTRYQ LRGYIEDSQDLEIYLIRYNAKHETVNVPGT G S L W P L S A Q S P I G K C G E P N R C A P H L E W N P D L D C S C R D G Z É K C A H H S H H F S L D I D V G C T D L N GNLEFLE EDLGYWYIFKIKTQDGHARL L V G E A L A R V K R A E K K W R D K R E K L E W E YKEAKE SVDALFVNSQYDQLQADTNIAMIH AADKRYHSIREAYLPELSVIPGVNAAIFEE LEGRI/FTAFSLYDARNVIKNGDFNNGLSCW NVK GYH V D V E E Q N N Q R S V L V L P E W E A E V S Q E V R V E P G R G Y I L R V T A Y K E G Y G E G C V T I H E I ENN/T DELK FSNCVEEEIY PNNTVTCN DYT SVPADYASVY NQÉEYGGAYTSRNRGYNE AP TDGRRENPCEFNRGYRDYTPLPVGY EEKSY V/T K E L E Y F P E T D K V W I E I G E T E G T F I ELLLMEE.

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8. A chimeric toxin, EW3, having pesticidal activity, having the following amino acid sequence:

MONNFNINECIFYNCLSNFEVEVLGÆERIE TGYTPIDISLSLTQFLLSEFVPGAG/FVLGL DIIWGIFGPSQWDAFLVQIEQLI/NQRIEE ARNQAISRLEGLSNLYQIYAES FREWE PTNPALREEMRIQFNDMNSALTT/AIPL QNYQVPLLSVYVQAANLHLSVL/ŔDVSVFGQ RWGFDAATINSRYNDLTRLIGMYTDYA YNTGLERVWGPDSRDWVRYNQ/FRRE LDIVALFPNYDSRRYPIRTV, ŚQL TRE PVLENFDGSFRGSAQGIER\$\(\frac{1}{2}\)IRSPHLMDIL VGFSG NSITIYTDAHRGYYYWSGH/QIMASF PEFTFPLYGTMGNAAPQQKIVAQLGQG TLSSTLYRRPFNIGINNG/QLSVLDG TVÁSLDEIFPQNNNV TSSNLFSAVYRK 5/6 M F F S G F S N S S V S I I R A PPROGFSHRLSHV/S PTFSWQHRSAEFN N/II/FSSQITQIPL NLGSGTSVVKGPSFTGGDILRRTSP LRVNITAPLSQRYKVRIRYASTTNL QFHTS IDGRPINQGNFSAT FTTPFNFSNGSSVE RIEFVPAEVTFEAÉ SNLQSGSFRTVG M S SÆ FNSGNEVYID AH ٧ AQKAVNELFT YDLE R VSNLVECLSDEF SNOIGLKTDVTD// HIDQ LDEKGELSEKVK/HAKR DERNL S L QGGDDVFKENYV I GINROLDRGWRGST D I T YOKIDESKL ΚA Υ TLLGTFDECY P/ TYL IRYNAKHETVNVF LRGYIEDSQDÆEIYL GSLWPLSAQ5/PIGKCGEPNRCAPHLEWNFD SCRDGE/K CAHHSHHFSLDIDVGCTDLN LDC HARLGNLEFLEEKP KIKTQDG EDLGVWVIF VKRAEKKWRDKREKLE EALARY BADINIAMIH $Y = \mathbb{D} \setminus \mathbb{Q}$ YKEAKES/ VNS \mathbb{Q} DAL FGVNAAIFEE LSV1 AADKRVHSIRE YLFE Α DFNNGL AFSLYDARNVI G K N LEGRIF/T NVKGHXDVEEQNNQR5VLVL ΑE FEWE BEGCVTI VRVCF/GRGYILRVTAYKEGY ENNT/DELKFSNCVEEEIYFNNTVTCNDYTV NEAPSVPADYASVY N Q E E Y G G A Y T S R N R G Y EEK/SYTDGRRENFCEFNRGYRDYTFLP VTKELEYFPET DKVWIEIGETEGTFIVDSV E L/L L M E E

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9. A chimeric toxin, EW4, having pesticidal activity, having the following amino acid sequence:

M D N N P N I N E C I P Y N C L S N P E V E V L G G E R I E T G Y T P I D I S L S L T Q F L L S E F V P G A G F V L G L V D I I W G I F G P S Q W D A F P V Q I E Q L I X Q R I E E ARNQAISRLEGLSNLYQIYAESF TNPALREEMRIQFNDMNSALTT/AIP Q N Y Q V F L L S V Y V Q A A N L H L S V L/R D V S V F G Q RWGFDAATINSRYNDLTRLIG/NYTDYAVRW YNTGLERVWGPDSRDWVRYNØFRREL DIVALFSNYDSRRYPIRTY/SQL TREIYTN PVLENFDGSFRGMAQRIEQ/NIRQPHLM N S I T I Y T D V H R G F N Y W S G Á Q I T A S F V G F S G PEFAFPLFGNAGNAAPPYLVSLTGLGIFRT LSSPLYRRIILGSGPNN/QELFVLDGTEFSF ASLTTNLPSTIYFORGTVDSLD VPPRAGFSHRLSHYTMLSQAAG VDSLDVI Α V Υ Т 'FNN/IIASDSITQIPAVKG RPMFSWIHRSAE NFLFNGSVISG # G # JT G G D L V R L N S S G N N I NRGYIEVPIHF/PST/ STRYRVRVRYASVT HLNVNWGNSSI/FS/NTVPATATSLDNLQSSD S L G N I V B V R N F S L E A E Y N L E R A Q K F G Y F E S A N A F T I D R F E F I P V T A S G T/ AEYNLERAQK AVNALF TSTNQLGLKTNVTDYHIDQVSNLVT YLSDE FCLDEKRELSEKVKHAKRLSDERNLLQDSN FKDINRQPER/GWG/GSTG I T IQGGDDVF YVTLSGTFDEC\Y#T ΥL Q KID ESKL Υ YOLRGYIED/SQ\D\L ΙY Ε L IRYNAKHE GTGSLWFLSAQSPIGKCGEFNRCAPHL PDLDCSCR/DGEKCAHHSHHFSLDIDV LNEDLGVWVIFKIKTQDGHARLGNLEFLEE LVGEALARVKRAEKKWRDKREKLEWE LQADTNI IVYKEA/KESVDALFVNSQYDQ IHAADKRVHS IREAYLPELSVIPGVNAAI IKNGDFNNGLS TAFSLYDARNV EELEG/RIF WNVKGHVDVEEQNNQRSVL VVPEWE YILRVT Ε G ΥG EG QEVR/VCFGR G AY Κ. E I E N N T D E L K F S N C V E E E I Y P N N Т T V N/ Q E E Y G G A Y T S R N R G Y N E A P S V P Y É E K S Y T D G R R E N P C E F N R G YRDY Т 'VTKELEYFPETDKVWIEIGETEGTFIVD **VELLLMEE**

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1 10. A chimeric toxin, ACB-1, having pesticidal activity, having the following amino acid sequence:

3 MDNNPNINECIPYNCLSNPEVEVLGGERIE

MDNNPNINECIPYNCLSNPEVEVLGGE TGYTPIDISLSLTQFLLSEFVPGAGFYLGL VDIIWGIFGPSQWDAFLVQIEQLINQ/RIEE FARNQAISRLEGLSNLYQIYAESFR ÉWEAD PTNPALREEMRIQFNDMNSALTTAX PLFAV QNYQVPLLSVYVQAANLHLSVLRDVSVFGQ RWGFDAATINSRYNDLTRLIGNY/TDYAVRW YNT GLERVWGPDSRDWVRYNQF KRELTL LDIVALFPNYDSRRYPIRTVSØLTREIYTN PVLENFDGSFRGSAQGIERSI/RSPHLMDIL NSITIYTDAHRGYYYWSGHQ/I MASPVGFSG PEFTFPLY(G.TMGNAAPQQR)ÍVAQLG Q G TLSSTLYR RPFNIGINNQQ/LSVLDGTEF GTSSNLPSAVYRKSGTVDŚLNEIPPQNNNV PPRQ<u>E</u>FSHRLSHVSMFRSGFSNSSVSI IRA SWQHRSAEFN NTIP/SSQITQIPLTKST Т NLGSGTSVVKGPG/FTGGDILRRTSPGQIST LRUNITAPLSQRYRYRYRIRYASTINL IDGRPINQGNFS AT MUSSGSFRT FTTPFNFSNGSS / FT LSAHVFNSGNEVYID RIEFVPAEVTFE/AEY/DLERAQKAVNELFTS NLVE CLSDE SNQIGLKTDVTD D Q V S YHI |HAK/RLSDERNL DPNFR LDEKQELSÆKVK LQ GINRQLDRGWRG\ST/DITIQGGDDVFK YYYOKIDESKLKAYT TLLGTFDECYPT RΥ LRGYTEDSQDLETYLIRYNAKHETVNVPGT GSLWFLSAQSFIGKCGEFNRCAPHLEWNPD LDCSCRDGEKCAHHSHHFSLDIDVGCTDLN EDLGVWVIFKIKTQDGHARLGNLEFLEEKP V G E A L A R V K R A E K K W R D K R E K L E W E T N I V YKEAKESVDALFVNSQYDQLQADTNIAMIH IREAYLPELSVIPGVNAAIFEE ADKRVHS IKNGDFNNGL5CW EGRIFTAFSLYDARNV NVKGHVDVEEQNNQRSVLV E W EAE L P V R V C P G R G Y I L R V T A Y K E G Y G E T IHEI G ENNTDELKFSNCVEEEIYPNNTVT CND PSVPADY NREEYGGAYTSRNRG ΥN EΑ PLPVGY EEKSYTDGRRENPCEFNRGYRDYT VTKELEYFPETOKVWIEIGETEGTFIVDSV ELLLMEE

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1 11. A chimeric toxin, SYWl, having pesticidal 2 activity, having the following amino acid sequence:

MDNNPNINECIPYNCLSNPEVEVLG/GERIE TGYTFIDISLSLTQFLLSEFVPGAØFVLGL VDIINGIFGPSQWDAFLVQIEQLI/NQRIEE FARNQAISRLEGLSNLYQIYAES FREWEAD PTNPALREEMRIQFNDMNSALTT/AIPLFAV Q N Y Q V P L L S V Y V Q A A N L H L S V L /R D V S V F G Q R W G F D A A T I N S R Y N D L T R L I G X Y T D Y A V R W YNTGLERVWGPDSRDWVRYNQ/FRRELTLTV LDIVALFPNYDSRRYPIRTVSQLTREIYTN PVLENFDGSFRGSAQGIE<u>G</u>S/IRSPHLMDIL N S I T I Y T D A H K G E Y Y W S G H Ø I M A S P V G F S G :PEFTFPLYGTMGNAAPQQR/IVAQLGQGVYR TLSSTLYRRPFNIGINNQ, ÁLSVLDGTEFAY. GTSSNLPSAVYRKSGTVD/SLDEIPPQNNNV PP:RQGFSHRLSHVSMFR, SGFSNSSVSIIRA PTFSWQHRSAEFNNIIP/SSQITQIPLTKST NLGSGTSVVKGPGFTG/GDILRRTSPGQIST LRVNITAPLSQRYRVRIRYASTTNLQFHTS IDGRPINQGNF SATM SSGSNLQSGSFRTVGFTTPFNFSNGS SVFT LSAHVFNSGNEVYID RIEFVPAEVTFEAEYDLERAQKAVNELFTS SNQIGLKTDVTDYHIDQVSNLVECLSDEFC LDEKQELSEKVKWAKRLSDERNLLQDPNFR GINRQLDR-GWRGSTDITIQGGDDVFKENYVTLLGTFDECYPT LYQKIDESKLKAYTRYQ /I Y L I R Y N A K H E T V N V P G T LRGYIEDSQDL PNRCAPHLEWNPD G S L W P L S A Q S P/I/G K C G E LDCSCRDGEK, ĆAHHSHHFSLDIDVGCTDLN EDLGVWVIFK/IKTQDGHARLGNLEFLEEKP LVGEALARVÁRAEKKWRDKREKLEWETNIV YKEAKES V D'ALF VNS Q Y D Q L Q A D T N I A M I H AADKRVHS/Í REAYLPELSVIPGVNAAI LEGRIFT AFSLYDARNVIKNG DFNNGLSCW NVKGHVD/VEEQNNQRSVLVLPEWEAE,VSQE VR.VCP.GRGYILRVTAYKEGYGEGCVTIH.EI ENNTDE/LKFSNCVEEEIYPNNTVTCNDYTV NREEYGGAYTSRNRGYNEAPSVPADYASVY EEKSY/TDGRRENPCEFNRGYRDYTPLPVGY VTKELEYFPETDKVWIEIGETEGTFIVDSV ELLL/MEE

12. A pesticidal composition comprising pesticide-containing substantially intact cells having prolonged pesticidal activity when applied to the environment of a target pest, wherein said pesticide is a chimeric toxin, is intracellular and is produced as a result of expression of a heterologous gene encoding said chimeric toxin in said cell.

- 13. A pesticidal composition according to claim 12, wherein said cells are killed under protease deactivating or cell wall strengthening conditions, while retaining pesticidal activity.
- 14. A pesticidal composition, according to claim 12, wherein said cells are prokaryotes selected from the group consisting of Enterobacteriaceae, Bacillaceae, Rhizobiaceae, Spirillaceae, Lactobacillaceae, Pseudomonadaceae, Azotobacteraceae, and Nitrobacteraceae; or lower eukaryotes selected from the group consisting of Phycomycetes, Ascomycetes, and Basidiomycetes.
- wherein said prokaryote is a <u>Bacillus</u> specie selected from a pesticide-producing strain of <u>Bacillus</u> thuringiensis, consisting of <u>B. thuringiensis M-7, B. thuringiensis var. kurstaki, B. thuringiensis var. finitimus, B. thuringiensis var. alesti, B. thuringiensis var. sotto, B. thuringiensis var. dendrolimus, B. thuringiensis var. sotto, B. thuringiensis var. dendrolimus, B. thuringiensis var. <u>B. thuringiensis var. galleriae</u>, B. thuringiensis var. <u>entomocidus</u>, B. thuringiensis var. <u>subtoxicus</u>, B. thuringiensis var. <u>subtoxicus</u>, B. thuringiensis var. <u>subtoxicus</u>, B. thuringiensis var. <u>morrisoni</u>, B. thuringiensis var. <u>ostriniae</u>, B. thuringiensis var. <u>morrisoni</u>, B. thuringiensis var. <u>ostriniae</u>, B. thuringiensis var. <u>darmstadiensis</u>,</u>

B. thuringiensis var. toumanoffi, B. thuringiensis var. kyushuensis, B. thuringiensis var. thompsoni, B. thuringiensis var. pakistani, B. thuringiensis var. israelensis, B. thuringiensis var. indiana, B. thuringiensis var. dakota, B. thuringiensis var. rohokuensis, B. thuringiensis var. kumanotoensis, B. thuringiensis var. tochigiensis, B. thuringiensis var. colmeri, B. thuringiensis var. wuhanensis, B. thuringiensis var. tenebrionis, B. thuringiensis var. thuringiensis, and other Bacillus species selected from B. cereus, B. moritai, B. popilliae, B. lentimorbus, and B. sphaericus.

16. A method of protecting plants against pests which comprises applying to said plants an effective amount of a pesticidal composition comprising pesticide-containing substantially intact unicellular microorganisms, wherein said pesticide is a chimeric toxin, is intracellular, and is produced as a result of expression of a heterologous gene encoding said chimeric toxin in said microorganism, and said microorganism is treated under conditions which prolong the pesticidal activity when said composition is applied to the environment of a target pest.

17. A method according to claim 16, wherein said microorganisms are prokaryotes selected from the group consisting of Enterobacteriaceae, Bacillaceae, Rhizobiaceae, Spirillaceae, Lactobacillaceae, Pseudomonadaceae, Azotobacteraceae, and Nitrobacteraceae; or lower eukaryotes, selected from the group consisting of Phycomycetes, Ascomycetes, and Basidiomycetes.

18. A method according to claim 16, wherein said
unicellular microorganisms are killed under protease
deactivating or cell wall strengthening conditions,
while retaining pesticidal activity.

- 19. Substantially intact unicellular microorganism cells containing an intracellular chimeric toxin, which toxin is a result of expression of a heterologous gene encoding said chimeric toxin, wherein said cells are killed under protease deactivating or cell wall strengthening conditions, while retaining pesticidal activity when said cell is applied to the environment of a target pest.
- 20. Cells according to claim 19, wherein said microorganism is a <u>Pseudomonad</u> and said toxin is derived from a <u>B</u>. <u>thuringiensis</u>.
- 21. A pesticidal composition, according to claim 12, wherein said gene, denoted pEW3, encoding a chimeric toxin, is as follows:

4	(start				400
5	CGAACATCAA TGAATGCATT GAAGTATTAG GTGGAGAAAG	CCTTATAATT			500
6	TTCCTTGTCG CTAACGCAAT	TTCTTTTGAG	TGAATTTGTT		600
7	GATTTGTGTT AGGACTAGTT CAATGGGACG CATTTCTTGT	GATATAATAT ACAAATTGAA	CAGTTAATTA	ACCAAAGAAT	
8	AGAAGAATTC GCTAGGAACC			GGACTAAGCA	700
9	ATCTTTATCA AATTTACGCA ACTAATCCAG CATTAAGAGA		GAGAGTGGGA ATTCAATTCA	ATGACATGAA	B00
10	CAGTGCCCTT/ ACAACCGCTA	TTCCTCTTTT	TGCAGTTCAA	AATTATCAAG TTTATCAGTT	800
11	TTCCTCTTTT ATCAGTATAT TTGAGAGATG TTTCAGTGTT	GTTCAAGCTG TGGACAAAGG	CAAATTTACA		
12	TATCAATAGT CGTTATAATG	ATTTAACTAG	GCTTATTGGC	AACTATACAG	1000
13		AATACGGGAT GTATAATCAA		ATGGGGACCG AATTAACACT	1100
14	AACTGTATTA GATATCGTTG	CTCTGTTCCC	GAATTATGAT	AGTAGAAGAT TACAAACCCA	1200
15	ATCCAATTCG AACAGTTTCC	CAATTAACAA			

16	AAGAAGTATT	AGGAGTCCAC	ATTTGATGGA	TATACTTAAC	AGTATAACCA	1300
17	TCTATACGGA	TGCTCATAGG	GGTTATTATT	ATTGGTCAGG	GCATCAAATA	
				GAATTCACTT		
18	•			ACGTATTGTT	/	
19				CTTTATATAG	,	1500
20				GTTCTTGACG CGCTGTATAC	,	1600
21				CACAGAATAA		1000
				CATGTTTCAA		1700
22		AATAGTAGTG		AAGAGCT (e.		1500
23	(start			TTTCTTGGCA CAAATTACAC	,	1900
24				TTCTGTCGTT	,	2000
25				CTTCACCTGE	<i>(</i>	
				TCACAAAGAT		2100
26				ATTCCATÁCA	TCAATTGACG	
27		CCGGAAGCTT		CAACTATGAG GGTTTTACTA	TAGTGGGAGT	2200
28		GGATCAAGTG	TATTTACGTT		GTCTTCAATT	2300
				AATTTGTTCC		
29		CAGAATATGA	TTTAGAAAGA	GCACAAAAGG	CGGTGAATGA	2400
30	GCTGTTTACT	TCTTCCAATC		ÁAAAACAGAT	GTGACGGATT	
31	ATCATATTGA	TCAAGTATCC		AGTGTTTATC		2500
32		AAAAACAAGA		AAAGTCAAAC		0100
	ACTTAGTGAT ATAGACAACT	GAGCGGAATT/	1 / 1	TCCAAACTTC -8TACGGATAT	TACCATCCAA	2600
33	GGAGGCGATG	,		GTTACGCTAT	TGGGTACCTT	2700
34	TGATGAGTGC			AAAAATAGAT		
35				GGTATATCGA		2800
	GACTTAGAAA			GCAAAACATG		
36		ACGGGTTCCT		TTCAGCCCAA		2900
37	GACTTAGATT			AAGTGTGCCC		3000
38				TACAGACTTA		5000
	TAGGTGTATG	GGTGATCTTT	AAGATTAAGA	CGCAAGATGG	GCACGCAAGA	3100
39				CCATTAGTAG		
40				GAGAGACAAA		
41				AGGCAAAAGA TTACAAGCGG		
42				TCATAGCATT		3300
				TCAATGCGGC		3400
43	GAATTAGAAĞ	GGCGTATTTT	CACTGCATTC	TCCCTATATG	ATGCGAGAAA	
44				CTTATCCTGC		3500
45				ACCAACGTTC GAAGTTCGTG		7/00
				CAAGGAGGGA		3800
46	GTTGCGTAAC					3700
47	AGCAACTGCG					• •
48	,			AGGTGCGTAC		3800
	ATCGAGGATA					
49	TATGAAGAAA					3900
50	/TAACAGAGGG AAGAATTAGA					4000
51	GAAACGGAAG					1000
<i>-</i>	GGAA (end H					

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and equivalent nucleotide sequences coding for toxin EW3 with the following amino acid sequence:

MDNNPNINECIPYNCLSNPE VEVLG/GERIE TGYTPIDISLSLTQFLLSEFVPGAÆFVLGL IFGPSQWDAFLVQIEQL YNQRIEE ARNQAISRLEGLSNLYQIYAES/FREWEAD PTNPALREEMRIQFNDMNSALT/TAIPLFAV QNYQVPLLSVYVQAANLHLSVKRDVSVFGQ R W G F D A A T I N S R Y N D L T R L I G/N Y T D Y A YNTGLERVWGPDSRDWVRYN/QFRRE T L D I V A L F P N Y D S R R Y P I R T 🗡 S Q L T PVLENFDGSFRGSAQGIERSIR S YTDAHRGYYYWSGHQI MA S GFSG TFPLYGTMGNAAPQQRIVAQ L G Q G V Y R R P F N I G I N N Q Q L S V L D G T E F A Y P S A V Y R X S G T V D S L D E I P P Q N N N V TLSSTL GTSSNL PPROGESHRLSH/VSM/FRSGFSNSS VSIIRA PTFSW@HRSAEFNNITPSS@ X T Q I N L G S G T S V V K G 🗲 G TGGDI S J∠ R: R Τ AFLSQRYRVRIB I T A A S T T L Q F Ν IDGRP INQGNF/S/ÁX SGSNLQ S SG NFSNGSSV/FTLS RIEFVPAEVTFÆREYDL Ε RAQKA VNE SNQIGLKTDV, TbYH I D Q ٧ S NL V E С L S Ε LDEKQELSEK/VKHAKRLS DERNL L QDPNFR GINR Q L D R G / W R G S T D I T I Q G G D D V F K E N Y V TLLGT.FDECYPTYLY@KIDESKLKAYTRY@ LRGYIEDS/QDLEIYLIRYNAKHET GSLWFLSAQS PIGKCGE FNRC AP HLEWNPD LDCSCRD'GEKCAHHSHHFSLDIDVGC TDLN EDLGVWVIFKIKTQDGHARLGNLEF LVGEAĽARVKRAEKKWRDKREKL EWET Y K E A K/E S V D A L F V N S Q Y D Q L Q A D INT MIH AADKŔVHSI REAYLPELSVI FGV NAAI LEGRIFTAFSLYDARNVI KNGDFNNGLSCW N V K/G H V D V Ε EQNNQR S V L F EWEAEVS@E Ε VRXCFGRG Υ ILRVTAY K GYGEGEVTIHEI ENNTHELKF SNCVEEE I F N N TVTCNDYTV N, Q E E Y G G A Y T S R N R G YNE APSVPADYASVY DGRRENFCEFNRGYRDY TPLPVGY T Ý T K E L E Y F P E T D K V W I E I G E T E G T F I V D S V ELLLMEE.

1 22. A pesticidal composition, according to claim 2 12, wherein said gene, denoted pEW4, encoding a 3 chimeric toxin, is as follows:

4	(et a	∾+ WD=1)	ATGG	ΔΤΔΔΓΔΔΤΓΓ	GAALATLAAT	
			TTTAAGTAAC			
5			GTTACACCCC			
6			GAATTTGTTC			700
			GGGAATTTTT			
7			AGTTAATTAA			800
8			AGATTAGAAG			
_	ATTTACGCAG	AATCTTTTAG	AGAGTGGGAA	GCAGATCCTA	CTAATCCAGC	900
9			TTCAATTCAA			
10	CAACCGCTAT	TCCTCTTTTG	GCAGTTCAAA	ATTATCAAGT	TCCTCTTTTA	1000
11			AAATTTACAT			
11	TTCAGTGTTT	GGACAAAGGT	GGGGATTTGA	TGCCGCGACT	ATCAATAGTC	1100
12			CTTATTGGCA			
10			AGAGCGTGTA			1200
13			TTAGAAGAGA			
14			AATTATGATA			1300
1.5			AGAAATTTAT			
15			GAATGGCTCA			1400
16			ATCCTTAATA			
17.			TTGGTCAGGG			1500
17 \			AATTCGCATT			
18			CTTGTCTCAT			1600
10			ATATAGAAGA			4700
19			TCCTTGATGG			1700
20			TCCACTATAT			1000
21			GCCACAGGAT			1800
21		CACCTTGAGA	GTCATGTTAC	(stop HD-1)		
22	GHGCHGIIIA	(start		•	ATGTTCTCTT	
23	CCATACATCC		TTTAATAATA			1800
23			GGGAAACTTT			
24			GTGGGGACTT			1900
25			GGGTATATTG			2,00
23			AGTTCGTGTA			2000
26			GGGGTAATTC			
27			TTAGATAATC			2100
-			TTTTACATCT			
28			CTGCAGGAGT			2200
29			CTCGAGGCTG			· •
49		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5			

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CAGAAGGCGG TGAATGCGCT GTTTACGTCT ACAAACCAAC TAGGGCTAAA 2,700
30
        AACAAATGTA ACGGATTATC ATATTGATCA AGTGTCCAAT TTAGTTACGT
        ATTTATCGGA TGAATTTTGT CTGGATGAAA AGCGAGAATT GTCCGAGAAA 2400
31
        GTCAAACATG CGAAGCGACT CAGTGATGAA CGCAATTTAC TCCAAGAT/C
32
        AAATTTCAAA GACATTAATA GGCAACCAGA ACGTGGGTGG GGCGGAAGTA 2500
        CAGGGATTAC CATCCAAGGA GGGGATGACG TATTTAAAGA AAATTACGTC
33
        ACACTATCAG GTACCTTTGA TGAGTGCTAT CCAACATATT TGTATCAAAA 2600
34
        AATCGATGAA TCAAAATTAA AAGCCTTTAC CCGTTATCAA TTAAGAGGGT
        ATATCGAAGA TAGTCAAGAC TTAGAAATCT ATTTAATTCG CXACAATGCA 2700
35
        AAACATGAAA CAGTAAATGT GCCAGGTACG GGTTCCTTAT GGCCGCTTTC
        AGCCCAAAGT CCAATCGGAA AGTGTGGAGA GCCGAATCĢÁ TGCGCGCCAC 2800
36
        ACCTTGAATG GAATCCTGAC TTAGATTGTT CGTGTAGØGA TGGAGAAAAG
        TGTGCCCATC ATTCGCATCA TTTCTCCTTA GACATTXATG TAGGATGTAC 2900
37
        AGACTTAAAT GAGGACCTAG GTGTATGGGT GATCT/TTAAG ATTAAGACGC
38
        AAGATGGGCA CGCAAGACTA GGGAATCTAG AGTT/TCTCGA AGAGAAACCA 3000
        TTAGTAGGAG AAGCGCTAGC TCGTGTGAAA AGAGCGGAGA AAAAATGGAG
39
        AGACAAACGT GAAAAATTGG AATGGGAAAC AAATATCGTT TATAAAGAGG 3100
40
        CAAAAGAATC TGTAGATGCT TTATTTGTAA ÁCTCTCAATA TGATCAATTA
        CAAGCGGATA CGAATATTGC CATGATTCAT/GCGGCAGATA AACGTGTTCA 3200
41
        TAGCATTOGA GAAGOTTATO TOPÓTGAGO, GTOTGTGATT COGGGTGTCA
42
        ATGCGGCTAT TTTTGAAGAA TYAGAAGGGC GTATTTTCAC TGCATTCTCC 3300
        CTATATGATG CGAGAAATGT CATTAAAAAT GGTGATTTTA ATAATGGCTT
43
        ATCCTGCTGG AACGTGAAAG ÁGCATGTAGA TGTAGAAGAA CAAACAACC 3400
44
        AACGTTCGGT CCTTGTTGTT/CCGGAATGGG AAGCAGAAGT GTCACAAGAA
        GTTCGTGTCT GTCCGGGTCG/TGGCTATATC CTTC8TGTCA CAGCGTACAA 3500
45
        GGAGGGATAT GGAGAAGGTT GCGTAACCAT TCATGAGATC GAGAACAATA
46
        CAGACGAACT GAAGTTTAGC AAOTGCGTAG AAGAGGAAAT CTATCCAAAT 3600
        AACACGGTAA CGTGTAATGA T/TÁTACTGTA AATCAAGAAG AATACGGAGG
47
        TGCGTACACT TCTCGTAATC GAGGATATAA CGAAGCTCCT TCCGTACCAG 3700
48
        CTGATTATGC GTCAGTCTAT/ GAAGAAAAAT CGTATACAGA TGGACGAAGA
        GAGAATCCTT GTGAATTTAA CAGAGGGTAT AGGGATTACA CGCCACTACC 3800
49
        AGTTGGTTAT GTGACAAAAG AATTAGAATA CTTCCCAGAA ACCGATAAGG
50
        TATGGATTGA GATTGGAGAA ACGGAAGGAA CATTTATCGT GGACAGCGTG 3900
        GAATTACTCC TTATGGAGGA A (end HD-73)
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and equivalent nucleotide sequences coding for toxin EW4 with the following amino acid sequence:

M D N N P N I N E C I P Y N C L S N P E V E V L G G E R I E 54 GYT/FIDISLSLTQFLLSEFVPGAGFVLGL 55 /Í W G I F G P S Q W D A F P V Q I E Q L I N Q R I E E D I A R'N Q A I S R L E G L S N L Y Q I Y A E S F R E W E A D 56 TNPALREEMRIQFNDMNSALTTAIPLLAV 57 V L R D V S V F G Q S SVYVQAANLHL DYAVRW FUAATINSRYNDL TRL I GNYT 58 LERVWGPDSRDWVRYNQFRÆELT 59 FSNYDSRRYFIRTVSQLTRE IVAL PVLENFDGSFRGMAQRIEQNIRQPHLMDIL 60 NSITIYTDVHRGFNYWSGHQITASPVGFSG 61 PEFAFPLFGNAGNAAPPVLVSLTGLGIFRT

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LSSPLYRRIILGSGPNNQELFVLDGTEFSF
            TNLPSTIYRQRGTVDSLDVI
      VPPRAGFSHRLSHVTMLSQAAGAVYTLR#
      RPMFSWIHRSAEFNNIIASDSITQIPA V/
      NFLFNGSVISGPGFTGGDLVRLNSSGN/NIQ
      NRGYIEVPIHFPSTSTRYRVRVRYAS Y TPI
      HLNVNWGNSSIFSNTVPATATSLDNL/QSSD
      F G Y F E S A N A F T S S L G N I V G V R N F S G T A G V I
      IDRFEFIPVTATLEAEYNLERAQKA/VNAL
      TSTNQLGLKTNVTDYHIDQVSNLV.
                                           TYLSDE
      F C L D E K R E L S E K V K H A K R L S D E R M L L
       KDINRQPERGWGGSTGITIQGG/DDVF
      YVTLSGTFDECYFTYLY@KIDE/SKL
                                            KAF
      Y Q L R G Y I E D S Q D L E I Y L I R Y N A K H E T V N V P
      G T G S L W P L S A Q S P I G K C G E P N/R C A P H L E W N
      P D L D C S C R D G E K C A H H S H H F , S L D I D V G C T D
      LNEDLGVWVIFKIKTQDGHARLGNLEFLEE
      K P L V G E A L A R V K R A E K K W R D K R E K L E W E T N
      I V Y K E A K E S V D A L F V N S Q Y D Q L Q A D T N I A M
      IHAADKRVHSIRE/AYL, PE/LSVIPGVNAAIF
      EELEGRIFTAFS LYDAR NVIKNGDFNNGLS
                                     YVPEWE
      CWNVKGHVDVE E/QNNQRSVL
      Q E V R V C P G R G Y I L R V T A Y K E G Y G E G C V T I H
F I F N N T D F I K F S N C V F F E I Y P N N T V T C N D Y
      EIENNTDELKFSNC
                             EEEIYPNNTVTCNDY
      E I E N N I D E L K F S N C V E E I Y P N N I V I C N D Y T V N Q E E Y G G A Y T S R N R G Y N E A P S V P A D Y A S
      VYEEKSYTDGRREN/PCEFNRGYRDYTPLPV
      GYVTKELEYFP
                       ET/PKVWIEIGETEGTFIVD-
89
      SVELLLMEE.
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23. A pesticidal composition, according to claim 12, wherein said gene, denoted pACB-1, encoding a chimeric toxin, is as follows:

	/				
4	/ (start			GATAACAATC	400
5	CGAACATCAA TGAATGCATT	CCTTATAATT	GTTTAAGTAA	CCCTGAAGTA	
6	GAAGTATTAG GTGGAGAAAG	AATAGAAACT	GGTTACACCC	CAATCGATAT	500
7	TTCCTTGTCG CTAACGCAAT	TTCTTTTGAG	TGAATTTGTT	CCCGGTGCTG	
8	GATTTGTGTT AGGACTAGTT	GATATAATAT	GGGGAATTTT	TGGTCCCTCT	600
9	CAATGGGÁCG CATTTCTTGT	ACAAATTGAA	CAGTTAATTA	ACCAAAGAAT	
1o	AGAAGAÁTTC GCTAGGAACC	AAGCCATTTC	TAGATTAGAA	GGACTAAGCA	700
11	ATCTTTATCA AATTTACGCA	GAATCTTTTA	GAGAGTGGGA	AGCAGATCCT	
12	ACTAATCCAG CATTAAGAGA	AGAGATGCGT	ATTCAATTCA	ATGACATGAA	800
13	CAGTGCCCTT ACAACCGCTA	TTCCTCTTTT	TGCAGTTCAA	AATTATCAAG	
1 4	TTCCTCTTTT ATCAGTATAT	GTTCAAGCTG	CAAATTTACA	TTTATCAGTT	900
15	TTGAGAGATG TTTCAGTGTT	TGGACAAAGG	TGGGGATTTG	ATGCCGCGAC	

	•					
16	TATCAATAGT	CGTTÁTAATG	ATTTAACTAG	GCTTATTGGC	AACTATACAG	1900
17	ATTATGCTGT	ACGCTGGTAC	AATACGGGAT	TAGAACGTGT	ATGGGGACCG	/
18	GATTCTAGAG	ATTGGGTAAG	GTATAATCAA	TTTAGAAGAG	AATTAACACT	/100
19		GATATCGTTG				4000
20	ATCCAATTCG	AACAGTTTCC	CAATTAACAA	GAGAAATTTA	TACAAACCCA	1200
21	GTATTAGAAA	ATTTTGATGG	TAGTTTTCGA	GGCTCGGCTC	AGGGCATAGA	4700
22		AGGAGTCCAC				1300
23	TCTATACGGA	TGCTCATAGG			GCATGAAATA	
24			TTCGGGGCCA		TTCOGCTATA	1400
25	TGGAACTATG	GGAAATGCAG	CTCCACAACA	ACGTATTGTT	GC/CAACTAG	
26	GTCAGGGCGT	GTATAGAACA	TTATCGTCCA	CTTTATATAG	AAGACCTTTT	1500
27	AATATAGGGA	TAAATAATCA	ACAACTATCT	GTTCTTGACG	øGACAGAATT	
28	TGCTTATGGA	ACCTCCTCAA	ATTTGCCATC	CGCTGTATAC/	AGAAAAAGCG	1600
29	GAACGGTAGA	TTCGCTGAAT	GAAATACCGC	CACAGAATAA	CAACGTGCCA	
30	CCTAGGCAAG	AATTTAGTCA	TCGATTAAGC	CATGTTTCAA	TGTTTCGTTC	1700
31	AGGCTTTAGT	AATAGTAGTG	TAAGTATAAT	AAGAGC7 (er	nd hd-73)	
32	(start	HD-1)	CCAACGT	TTTCT/GGCA	GCATCGCAGT	1900
33	GCTGAATTTA	ATAATATAAT	TCCTTCATCA	PARATTACAC	AAATACCTTT	
34	AACAAAATCT	ACTAATCTTG	GCTCTGGAAC	TTENETCETT	AAAGGACCAG	2000
35		AGGAGATATT	/	DETTCACCTES	CCAGATTTCA	
36		TAAATATTAC	TGCACCATTA	TCACAAAGAT	ATCGGGTAAG	2100
37		GCTTCTACTA	CAAATTTACA	AT/TCEATACA	TCAATTGACG	
38		TAATCAGGGT	AATTVTTCAG	CAACTATGAG	TAGTGGGAGT	2200
39	AATTTACAGT		TAGGACTETA	GGTTTTACTA	CTCCGTTTAA	
40	CTTTTCAAAT	GGATCAAGTG	TATTTAEGAT	AAGTGCTCAT	GTCTTCAATT	2300
41	CAGGCAATGA		GATICGAATTG	AATTTGTTCC	GGCAGAAGTA	
42		CAGAATATGA	TTTAGAAAGA	GCACAAAAGG	CGGTGAATGA	2400
43	GCTGTTTACT	TOTTOCAATO	AAATCGGGTT		STGACGGATT	
44	ATCATATTGA	TCAAGTATCC	AATTTAGTTG	AGTGTTTATC	AGATGAATTT	2500
45		AAAAACAAGA	ATTETCCGAG	AAAGTCAAAC	ATGCGAAGCG	
	ACTTAGTGAT	GAGCGGAATT/	TACTTCAAGA	TCCAAACTTC	AGAGGGATCA	2600
46	ATAGACAACT	AGACCGTGGC	TGGAGAGGAA		TACCATCCAA	
47		ACGTATTEAA			TGGGTACCTT	2700
48	TGATGAGTGC	TATCCAACGT	ATTTATATCA		GAGTCGAAAT	
49	TAAAAGCCTA				AGATAGTCAA	2800
50	GACTTAGAAA	TCTATTTAAT		GCAAAACATG		
51					AGTCCAATCG	2900
52		ABAGCCGAAT				
53	CACTTACATT	STTCGTGTAG	CONTREASA	AAGTGTGCCC	ATCATTCGCA	3000
54	TOATTTOTOO	TTAGACATTG	ATETACEATE	TACAGACTTA	AATRAGGACC	
55	TACCTCTATE	GGTGATCTTT	AVEVITABLE	CECAAGATEG	BCACGCAAGA	3100
56 57	CTACCCAATC	TAGAGTTTCT	LEVVEVEVEVOV	CCATTAGTAG	GAGAAGCGCT	0
	ACCTOCACT	AAAAGAGCGG	VCVVVVVVV	CCATTASTAS	CETEODOGA	3200
58	AGC 1 CG 7G 1G	AACAAATATC	CTTTATAAAG	VECLATORE	ATCTGTAGAT	
59	אניטני ו אאניט ו	TAAACTCTCA	ATATRATCA	TTACAAGCGG	ATACGAATAT	3300
60	TECENTENT	CATGCGGCAG		TOATAGCATT	CGAGAAGCTT	
61	ATETECETEA	GCTGTCTGTG	VITCUEBLE	TOATRORE	TATTTTTTAA	3400
62	BANTTACAAC	GGCGTATTTT	PACTECATTO	TECETATATA	ATECGAGAAA	
63	TCTCATTAAA	AATGGTGATT	TTAATAATRE	CTTATCCTGC	TEGAACETEA	3500
64	ANDROCATOR	AGATGTAGAA		APPAAPRETTO	GETCCTTETT	
65	HHUUUUCHIUI	HOM I G I HOMH		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		

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CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600 66 67 TCGTGGCTAT ATCCTTCGTG TCACAGCGTA CAAGGAGGGA TATGGAGAAG GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3/00 68 69 ABCAACTECG TAGAAGAGA AATCTATCCA AATAACACGG TAACGTGTAA TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 70 71 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900 72 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGÁCAA 73 74 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 75 76 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCC/TATGGA GGAA (end HD-1)

and equivalent nucleotide sequences coding for toxin ACB-1 with the following amino acid sequence:

MDNNPNINECIPYNC/LSN/FEVEVLGGERIE VPGA GF VLGL VDIIWGIFGPSQW FARNQAISRLEGL VQIEQLI NQRIEE S N (Ļ∕ QIYAE SF PTNPALREEMRIÆFN/b-T TA MISAL QNYQVPLLSVYV/QAAN/LHLSVL R D V S VΕ RWGFDAATINSRYNDL TRLIGNYTDY AV YNTGLERVWGPDS/RDWVRYNQFRREL TLTV IRTVSQL LDIVAL FPNYDS' RRY P TRE PVLENFDG'SFRG/SAQG I ERSIRSPHLMDIL IYTDAHR, GYYYWSGHQIMASPVG N S ΙT TFPLYGTMGNAA PQQRIVAQLGQGVYR NQQLSVLDGTEFAY TLYRRPFNIGI N N T V NEIFPQNNNV S SNLPSAXYRKSG DSL QEFSHR/LSHVS ΜF RSGF S Ν S R S IIPSSQI F' T FSWQHR/SAEFNN T Q I PL V K G P G F T G G D I L R R T S P G Q GSGTSY TINLOFHI QRYRVRIRY LRVNITA/F LS A S NLQSGSFRT IDGRPINGGNFS ATMSS G S TPFN/F S TLS AHVFNSGNEVYID FT NGSSVF RIEFV A E V T FEAEYDLER AQKAVNE SNQIG'LK TD T D YHIDQVSNLVECLSDE ٧ Ε DERNL S Ε L D E K /Q K VKHAK R L S L T IQG D D V F K GINRQLDR R G Т D I G G W S TLLÆTFDECYPTYLY K IDE Q. SKL KA Υ LRG/YIEDSQDLEIYLIR YNAKHETVNVPG GKCGEFNRCAPHLEWNFD GSKWFL SAQSPI EKCAHHSHHFSLDIDVGC D/C S C R D G IKTQDGHARLGNLEFL G VWVIFK ARVKRAEKKWRDKREKLEWETNIV VGEAL Y/KEAKESVDALFVNSQYDQLQADTNIAMIH AADKRVHSIREAYLPELSVIPGVNAAIFEE

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LEGRIFTAFSLYDARNVIKNGDFNNGLSQ
111
      NVK GHVDVEEQNNQRSVLVLPEWEAEVS/QE
112
      V R.V C.P G R G Y I L R V T A Y K E G Y G E G C V T I 🖟 E I
113
      ENNTDELKFSNCVEEEIYPNNTVTCND/YTV
114
      N Q E E Y G G A Y T S R N R G Y N E A P S V P A D Y A S V Y
115
      EEKSYTDGRRENPCEFNRGYRDYTPL/PVGY
116
      VTKELEYFPETDKVWIEIGETEGTF/IVDSV
117
      ELLLMEE.
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24. A pesticidal composition, according to claim 12, wherein said gene, denoted pSYW1, encoding a chimeric toxin, is as follows:

ATG GATAACAATC 400 (start HD-73) CGAACATCAA TGAATGCATT CCTTATAATT GTT/AAGTAA CCCTGAAGTA GAAGTATTAG GTGGAGAAG AATAGAAACT GGTTACACCC CAATCGATAT 500 TTCCTTGTCG CTAACGCAAT TTCTTTTGAG TGAATTTGTT CCCGGTGCTG GATTTGTGTT AGGACTAGTT GATATAATAT/GGGGAATTTT/TGGTCCCTCT 600 CAATGGGACG CATTTCTTGT ACAAATTGAA CAGTTAATTA ACCAAAGAAT AGAAGAATTC GCTAGGAACC AAGCCATTC TAGATTAGAA GGACTAAGCA 700 ATCTTTATCA AATTTACGCA GAATCTMTTA GASAGTGGGA AGCAGATCCT CAGTGCCCTT ACAACCGCTA T/TCC//CTTTT TGCAGTTCAA AATTATCAAG TICCTCTTTT ATCAGTATAT GIJEAAGCTG CAAATTTACA TTTATCAGTT 900 TTGAGAGATG TTTCAGTGTT TGGACAAAGG TGGGGATTTG ATGCCGCGAC TATCAATAGT CGTTATAATG ATTTAACTAG GCTTATTGGC AACTATACAG 1000 ATTATGCTGT ACGCTGGTAC, AATACGGGAT TAGAACGTGT ATGGGGACCG GATTCTAGAG ATTGGGTAAG GTATAATCAA ITTAGAAGAG AATTAACACT 1100 AACTGTATTA GATATCGT/TG CTCTGTTCCC GAATTATGAT AGTAGAAGAT ATCCAATTCG AACAGTTTCC CAATTAACAA GAGAAATTTA TACAAACCCA 1200 AGGAAGTATT AGGAGTCCAC ATTTGATGGA TATACTTAAC AGTATAACCA 1300 TCTATACGGA TGCTCATAAA GGGGAATATT ATTGGTCAGG GCATCAAATA ATGGCTTCTC CT/STAGGGTT TTCGGGGCCA GAATTCACTT TTCCGCTATA 1400 TGGAACTATG ĢĞAAATGCAG CTCCACAACA ACGTATTGTT GCTCAACTAG GTCAGGGCGT /GTATAGAACA TTATCGTCCA CTTTATATAG AAGACCTTTT 1500 AATATAGGGA TAAATAATCA ACAACTATCT GTTCTTGACG GGACAGAATT TGCTTATGGÁ ACCTCCTCAA ATTTGCCATC CGCTGTATAC AGAAAAAGCG 1600 GAACGETÁGA TICGCIGGAI GAAATACCGC CACAGAATAA CAACGIGCCA CCTAGGÉAAG GATTTAGTCA TCGATTAAGC CATGTTTCAA TGTTTCGTTC 1700 AGGCTTTAGT AATAGTAGTG TAAGTATAAT AAGAGCT (end hd-73) CCAACGT TTTCTTGGCA GCATCGCAGT 1900 (start HD-1) GCTGAATTTA ATAATATAAT TCCTTCATCA CAAATTACAC AAATACCTTT AACAAAATCT ACTAATCTTG GCTCTGGAAC TTCTGTCGTT AAAGGACCAG GÁTTTACAGG AGGAGATATT CTTCGAAGAA CTTCACCTGG CCAGATTTCA ACCTTAAGAG TAAATATTAC TGCACCATTA TCACAAAGAT ATCGGGTAAG 2100 AATTEGETAE GETTETAETA CAAATTTAEA ATTEEATAEA TEAATTGAEG GAAGACCTAT TAATCAGGGT AATTTTTCAG CAACTATGAG TAGTGGGAGT 2200 AATTTACAGT CCGGAAGCTT TAGGACTGTA GGTTTTACTA CTCCGTTTAA CTTTTCAAAT GGATCAAGTG TATTTACGTT AAGTGCTCAT GTCTTCAATT 2300 CAGGCAATGA AGTTTATATA GATCGAATTG AATTTGTTCC GGCAGAAGTA

						- /
	ACCTTTGAGG	CAGAATATGA	TTTAGAAAGA	GCACAAAAGG	CGGTGAATGA	2400
}	GCTGTTTACT	TCTTCCAATC	AAATCGGGTT	AAAAACAGAT	GTGACGGATT	
Į.	ATCATATTGA	TCAAGTATCC	AATTTAGTTG	AGTGTTTATC	AGATGAATTT	2500
1	TGTCTGGATG	AAAAACAAGA	ATTGTCCGAG	AAAGTCAAAC	ATGCGAAGCG	
	ACTTAGTGAT	GAGCGGAATT	TACTTCAAGA	TCCAAACTTC	AGAGGGATCA	2600
	ATAGACAACT	AGACCGTGGC	TGGAGAGGAA	GTACGGATAT	TACCATCCAA	
	GGAGGCGATG	ACGTATTCAA	AGAGAATTAC	GTTACGCTAT	TGGGTAÇCTT	2700
	TGATGAGTGC	TATCCAACGT	ATTTATATCA	AAAAATAGAT	GAGTCZAAAT	1
	TAAAAGCCTA	TACCCGTTAT	CAATTAAGAG	GGTATATCGA	AGATAGTCAA	2800
	GACTTAGAAA	TCTATTTAAT	TCGCTACAAT	GCAAAACATG	AAACAGTAAA	
	TGTGCCAGGT	ACGGGTTCCT	TATESCOGOT	TTCAGCCCAA	ARTCCAATCG	2900
	GAAAGTGTGG	AGAGCCGAAT	CGATGCGCGC	CACACCTTGA	ATGGAATCCT	
	GACTTAGATT	GTTCGTGTAG	GGATGGAGAA	AAGTGTGCCC/	ATCATTCGCA	3000
	TCATTTCTCC	TTAGACATTG	ATGTAGGATG	TACAGACTTA	AATGAGGACC	
	TAGGTGTATG	GGTGATCTTT	AAGATTAAGA	CGCAAGATGG	GCACGCAAGA	3100
	CTAGGGAATC	TAGAGTTTCT	CGAAGAGAAA	CCATTAGTAG	GAGAAGCGCT	
	AGCTCGTGTG	AAAAGAGCGG	AGAAAAAATG	GAGAĢÁCAAA	CGTGAAAAAT	3200
	TGGAATGGGA	AACAAATATC	GTTTATAAAG	AGGÇAAAAGA	ATCTGTAGAT	
	GCTTTATTTG	TAAACTCTCA	ATATGATCAA	TTACAAGCGG	ATACGAATAT	3300
	TGCCATGATT	CATGCGGCAG	ATAAACGTGT	TEATAGCATT	CGAGAAGCTT	
	ATCTGCCTGA	GCTGTCTGTG	ATTCCGGGIG	TCAATGCGGC	TATTTTTGAA	3400
	GAATTAGAAG	GGCGTATTTT	CACTGCATTC/	TECETATATE	ATGCGAGAAA	
	TGTCATTAAA	AATGGTGATT	TTAATAATGG	CTTATCCTGC	TGGAACGTGA	3500
	AAGGGCATGT	AGATGTAGAA	GAACAAAACA		GGTCCTTGTT	
	CTTCCGGAAT	GGGAAGCAGA	AGTGTCADAA		TCTGTCCGGG	3600
	TCGTGGCTAT	ATCCTTCGTG	TEACASEGTA		TATGGAGAAG	
	GTTGCGTAAC	CATTCATGAG	ATCGÁGAACA		ACTGAAGTTT	3700
	AGCAACTGCG	TAGAAGAGGA	AATCTATOCA	•	TAACGTGTAA	
	TGATTATACT	GTAAATCAAG	/AĢĞAATA¢GG	AGGTGCGTAC	ACTTCTCGTA	3800
	ATCGAGGATA	TAACGAAGCT	ECTTCCETAC	CAGCTGATTA	TGCGTCAGTC	
	TATGAAGAAA	AATCGTATAC	AGATGZACGA	AGAGAGAATC	CTTGTGAATT	3900
		,	ACADÓCCACT	ACCAGTTGGT	TATGTGACAA	
	AAGAATTAGA			AGGTATGGAT	TGAGATTGGA	4000
	GAAACGGAAG		CGTGGACAGC	GTGGAATTAC	TCCTTATGGA	
	GGAA (end H	ID-1)				

and equivalent nucleotide sequences coding for toxin
SYWl with the following amino acid sequence:

M D N N P N I N E C I P Y N C L S N P E V E V L G G E R I E TGYTPIDISLSLTQFLLSEFVPGAGFVLGL VDIIWGIFGPSQWDAFLVQIEQL INQRIEE FARNQAISRLEGLSNLYQIYAESFREWEAD PTNPALREEMRIQFNDMNSALTTAIFLFAV QNYQVPLLSVYVQAANLHLSVLRDVSVFGQ RWGFDAATINSRYNDLTRLIGNYTDYAVRW YNTGLERVWGPDSRDWVRYNQFRRELTLTV LDIVALFFNYDSRRYPIRTVSQLTREIYTN P V L E N F D G S F R G S A Q G I E G S I R S P H L M D I L NSITIYTDAHKGEYYWSGHQIMASPVGFSG /P:E:FTFPLYGTMGNAAPQQRIVAQLGQGVYR

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TLSSTLYRRPFNIGINNQQLSVLDGTEFA
  SSNLPSAVYRKSGTVDSLDE
     GFSHRLSHVSMFRSGFSNSS
                               VSI I/
     WQHRSAEFNNIIPSSQITQIPLT/KST
     G T S V V K G P G F T G G D I L R R T S P G
 RVNITAPLSQRYRVRIRYAS
                              G S ∕F
                            Q S
                 TMSSGSNL
      INQGNFSA
      NFSNGSSVFTLSAHVFNSGXE
              EAEYDLERAQKAYNE
 IEFVPAEVTF
  QIGLKTDVTDYHIDQVSNLVE
                               LS
                                  DE
 DEKQELSEKVKHAKRLSDERNYLQDPNF
  NRQLDRGWRGSTDITIQGGD/DVF
              TYLYQKIDESXLKA
 LLGTFDECYP
 RGYIEDSQDLEIYLIRYNAKHET
 SLWFLSAQSPIGKCGEFNR/CAPHL
 DCSCRDGEKCAHHSHHFS
                          DIDVG
             IKTQDGHAR/LGNL
                              E F
EDLGVWVIFK
        ARVKRAEKKWRD# R
                          ΕK
                          RADTNIA
              FVNS QYD QL
YKEAKESVDAL
                  FEL/S
                       VIFG
AADKRVHSIREAYL
LEGRIFTAFSLYDARNAIKN
                          G P F N N.G
NVKGHVDVEEQNNQRSVLVL
VRVCPGRGYILRVTAYKEGY
ENNTDELKFSNCVEEEIYPN
NQEEYGGAYTSRNRGYNEAP
EEKSYTDGRRENPCEFNRGY
                            Ε
                           Ε
                             G C
                                V T
                          G
                            Т
                             V T
                                С
                          S
                             PA
                          RDYTPLP
VTKELEYFPETDK/WWIEIGE
                          TE
                             GTFI
ELLLMEE.
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25. A recombinant DNA transfer vector comprising DNA having the following nucleotide sequence or equivalent nucleotide sequences containing bases whose translated region codes for the same amino acid sequence:

CLAMBIACE					
	/ (start		ATG	GATAACAATC	400
	,TGAATGCATT	CCTTATAATT	GTTTAAGTAA	CAATCGATAT	500
GAAGTATTAG/		AATAGAAACT			
TTCCTTGTÇĞ	CTAACGCAAT	TTCTTTTGAG		CCCGGTGCTG	100
GATTTGTGTT	AGGACTAGTT	GATATAATAT	GGGGAATTTT	TEGTCCCTCT	600
CAATGGGACG	CATTTCTTGT	ACAAATTGAA	CAGTTAATTA	ACCAAAGAAT	
AGAAGAATTC		AAGCCATTTC	TAGATTAGAA	GGACTAAGCA	700
ATCTTTATCA		GAATCTTTTA	GAGAGTGGGA	AGCAGATCCT	
ACTAATCCAG		AGAGATGCGT	ATTCAATTCA	ATGACATGAA	800
CAGTGCCCTT	ACAACCGCTA	TTCCTCTTTT	TGCAGTTCAA	AATTATCAAG	
3.1,21.22.2.	ATCAGTATAT	GTTCAAGCTG	CAAATTTACA	TTTATCAGTT	900
TTCCTCTTTT		TGGACAAAGG	TGGGGATTTG	ATGCCGCGAC	
<i>y</i> (aa	TTTCAGTGTT		GCTTATTGGC	AACTATACAG	1000
TATCAATAGT	CGTTATAATG	ATTTAACTAG	_	ATGGGGACCG	
ATTATGCTGT	ACGCTGGTAC		TAGAACGTGT	AATTAACACT	1100
GATTCTAGAG	ATTGGGTAAG	GTATAATCAA	TTTAGAAGAG		1100
AACTGTATTA		CTCTGTTCCC	GAATTATGAT	AGTAGAAGAT	1200
ATCCAATTCG	AACAGTTTCC	CAATTAACAA	GAGAAATTTA	TACAAACCCA	1200
GTATTAGAAA	ATTTTGATGG	TAGTTTTCGA	GGCTCGGCTC	AGGGCATAGA	

			•			,
23	AAGAAGTATT	AGGAGTCCAC	ATTTGATGGA	TATACTTAAC	AGTATAACCA	1300/
24	TCTATACGGA	TGCTCATAGG		ATTGGTCAGG		/
25		CTGTAGGGTT		GAATTCACTT		19/00
26	TGGAACTATG		CTCCACAACA		GCTCAACTAG	/
27	GTCAGGGCGT		TTATCGTCCA		AAGACCTTTT/	1500
28			ACAACTATCT		GGACAGAAT/T	
29	TGCTTATGGA	ACCTCCTCAA	ATTTGCCATC	CGCTGTATAC		1600.
30		TTCGCTGGAT		CACAGAATAA	,	
31	CCTAGGCAAG	GATTTAGTCA	TCGATTAAGC	CATGTTTCAA		1700
32	AGGCTTTAGT	AATAGTAGTG	TAAGTATAAT		nd hyd-73)	
33	(start	HD-1)	CCAACGT	TTTCTTGGCA		1900
34		ATAATATAAT		CAAATTACAC	MAATACCTTT	
35		ACTAATCTTG		TTCTGTCGTT	AAAGGACCAG	2000
36			CTTCGAAGAA		CCAGATTTCA	
37			TGCACCATTA		ATCGGGTAAG	2100
38	AATTCGCTAC	GCTTCTACTA	CAAATTTACA		TCAATTGACG	
39	GAAGACCTAT	TAATCAGGGT	AATTTTTCAG	,	TAGTGGGAGT	2200
40	AATTTACAGT	CCGGAAGCTT	TAGGACTGTA	GGTT/TTACTA		
41	CTTTTCAAAT	GGATCAAGTG	TATTTACGTT	AAGTGCTCAT	GTCTTCAATT	2300
42	CAGGCAATGA	AGTTTATATA	GATCGAATTG	AATTTGTTCC	GGCAGAAGTA	
43	ACCTTTGAGG	CAGAATATGA	TTTAGAAAGA	ECACAAAAGG	CGGTGAATGA	2400
44	GCTGTTTACT	TCTTCCAATC	AAATEGGGTT/	AAAAACAGAT	GTGACGGATT	
45	ATCATATTGA	TCAAGTATCC	AAT/TTAGTT.G	AGTGTTTATC	AGATGAATTT	2500
46	TGTCTGGATG	AAAAACAAGA	ATTGTCCGAG	AMAGTCAAAC	ATGCGAAGCG	
47	ACTTAGTGAT	GAGCGGAATT		*CCAAACTTC	AGAGGGATCA	2600
48	ATAGACAACT	AGACCGTGGC	TGGAGAGGAA		TACCATCCAA	
49	GGAGGCGATG	ACGTATTCAA	' XI /	GTTACGCTAT	TGGGTACCTT	2700
50	TGATGAGTGC	TATCCAACGT	ATTTATATCA		GAGTCGAAAT	
		TACCCGTTAT	CAATTAAGAG			2800
51	GACTTAGAAA	TCTATTTAAT	TCBC/TACAAT		AAACAGTAAA	
52		ACGGGTTCCT/	TATESCCECT	TTCAGCCCAA		2900
53	TGTGCCAGGT	AGAGCCGAAT		CACACCTTGA		
54	GAAAGTGTGG	GTTCGTGTAG		AAGTGTGCCC	ATCATTCGCA	3000
55	GACTTAGATT	TTAGACATTG		TACAGACTTA		
56	TCATTTCTCC		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	CGCAAGATGG	GCACGCAAGA	3100
57	TAGGTGTATG	GGTGATCTTT	CGAAGAGAAA	_	GAGAAGCGCT	
58	CTAGGGAATC	TABAGTTTCT		GAGAGACAAA		3200
59	AGCTCGTGTG	AAAAGAGCGG	AGAAAAAATG	AGGCAAAAGA		0200
60	TGGAATGGGA	AACAAATATC	GILLHIHHHG	TTACAACCC	ATACGAATAT	מחבד
61	GCTTTATTTG	TAAACTCTCA	ATAIGHTCHA	TTACAAGCGG	CEVEVVECTT	5500
62	TGCCATGATT	/CATGCGGCAG	ATAAALGIGI	TCATAGCATT	TATTTTEAA	7400
63	ATCTGCCTGA	GCTGTCTGT.G	ATTCCGGGTG	TCAATGCGGC	THITITIONN	3400
64	GAATTAGAÁG	GGCGTATTTT	CACTGCATTC	TCCCTATATG	AIGLGAGHAA	7500
65	TGTCATTÁAA	AATGGTGATT	TTAATAATGG	CTTATCCTGC	IGGAACGIGA	3500
66	AAGGGCÁTGT	AGATGTAGAA	GAACAAAACA	ACCAACGTTC	GGTCCTTGTT	
67	CTTCCGGAAT	GGGAAGCAGA	AGTGTCACAA	GAAGTTCGTG	TCTGTCCGGG	3600
68	TOGTOGOTAT	ATCCTTCGTG	TCACAGCGTA	CAAGGAGGGA	TATGGAGAAG	
69	GTTGCGTAAC	CATTCATGAG	ATCGAGAACA	ATACAGACGA	ACTGAAGTII	3700
70	ARCÁACTECE	TAGAAGAGGA	AATCTATCCA	AATAACACGG	TAACGTGTAA	
71	TRATTATACT	GTAAATCAAG	AAGAATACGG	AGGTGCGTAC	ACTTCTCGTA	3800
72	ATCGAGGATA	TAACGAAGCT	CCTTCCGTAC	CAGCTGATTA	TGCGTCAGIC	
72	TÁTGAGGAA	AATCGTATAC	AGATGGACGA	AGAGAGAATC	CTTGTGAATI	3900
73 74	TAALAGAGGG	TATAGGGATT	ACACGCCACT	ACCAGTTGGT	TATGTGACAA	
7.4 7.5	ΔΩΓΔΑΤΤΔΓΑ	ATACTTCCCA	GAAACCGATA	AGGTATGGAT	TGAGATTGGA	4000
	HOUNT INON	GAACATTTAT	CGTGGACAGC	GTGGAATTAC	TECTTATGGA	
76 77	GGAA (end i					
77	GOTIN TELLE					

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26. A recombinant DNA transfer vector comprising
   1
   2
          DNA having the following nucleotide sequence or
   3
          equivalent nucleotide sequences containing bases whose
          translated region codes for the same amino acid sequence:
   4
   5
                                         ATGG ATAACAATCC GAACATCAAT
                  (start HD-1)
   6
           GAATGCATTC CTTATAATTG TTTAAGTAAC CCTGAAGTAG AAGTA/TAGG 600
   7
          TGGAGAAAGA ATAGAAACTG GTTACACCCC AATCGATATT TCCT/TGTCGC
   8
          TAACGCAATT TCTTTTGAGT GAATTTGTTC CCGGTGCTGG ATYTGTGTTA 700
   9
          GGACTAGTTG ATATAATATG GGGAATTTTT GGTCCCTCTC AATGGGACGC
          ATTTCCTGTA CAAATTGAAC AGTTAATTAA CCAAAGAATA GAAGAATTCG 800
CTAGGAACCA AGCCATTTCT AGATTAGAAG GACTAAGCAA TCTTTATCAA
 10
 11
          ATTTACGCAG AATCTTTTAG AGAGTGGGAA GCAGATCC/A CTAATCCAGC 900
 12
          ATTAAGAGAA GAGATGCGTA TTCAATTCAA TGACATGÁAC AGTGCCCTTA
 13
          CAACCGCTAT TCCTCTTTTG GCAGTTCAAA ATTATÇAAGT TCCTCTTTTA 1000
 14
15
          TCAGTATATG TTCAAGCTGC AAATTTACAT TTATZAGTTT TGAGAGATGT
 16
          TTCAGTGTTT GGACAAAGGT GGGGATTTGA TGCCGCGACT ATCAATAGTC 1100
 17
          GTTATAATGA TTTAACTAGG CTTATTGGCA AÇTATACAGA TTATGCTGTG
          CGCTGGTACA ATACGGGATT AGAGCØTGTA /GGGGACCGG ATTCTAGAGA 1200
 18
          TTGGGTAAGG TATAATCAAT TTAGAAGAGA/GCTAACACTT ACTGTATTAG
 19
 20
          ATATCGTTGC TCTATTCTCA AAT√ATGÄTÁ GTCGAAGGTA TCCAATTCGA 1300
          ACASTTTCCC AATTAACAAG AGAATTTAT ACGAACCCAG TATTAGAAAA
TTTTGATGGT AGTTTTCGTG GAATGGC CA GAGAATABAA CAGAATATTA 1400
 21
 22
          GGCAACCACA TCTTATGGAT AT/CCT/TA/ATA GTATAACCAT TTATACTGAT
 23
          GTGCATAGAG GCTTTAATTA TÍGETCÁGG CATCAAATAA CAGCTTCTCC 1500
 24
          TGTAGGGTTT TCAGGACCAG AATTCCCATT CCCTTTATTT GGGAATGCGG
 25
26
          GGAATGCAGC TCCACCCGTA CTTGTCTCAT TAACTGGTTT GGGGATTTTT 1600
          AGAACATTAT CTTCACCTTT ATATAGAAGA ATTATACTTG GTTCAGGCCC
AAATAATCAG GAACTGTTTG TCCTTGATGG AACGGAGTTT TCTTTTGCCT 1700
CCCTAACGAC CAACTTGCCT TCCACTATAT ATAGACAAAG GGGTACAGTC
 27
28
29
30
          GATTCACTAG ATGTAATACC GCCACAGGAT AATAGTGTAC CACCTCGTGC 1800
31
          GGGATTTAGC CATCGATTGA GTCATGTTAC AATGCTGAGC CAAGCAGCTG
32
          GAGCAGTTTA CACCTTGAGA GCTCAACGT
                                              (stop HD-1)
33
34
                           (start HD-73)
                                                      CCT ATGTTCTCTT
          GGATACATCS JÁGTGCTGAA TITAATAATA TAATTGCATC GGATAGTATT 1800
35
          ACTCAAATCC/CTGCAGTGAA GGGAAACTTT CTTTTTAATG GTTCTGTAAT
36
          TTCAGGACCÁ GGATTTACTG GTGGGGACTT AGTTAGATTA AATAGTAGTG 1900
37
          GAAATAAÇÁT TCAGAATAGA GGGTATATTG AAGTTCCAAT TCACTTCCCA
38
          TCGACATCTA CCAGATATCG AGTTCGTGTA CGGTATGCTT CTGTAACCCC 2000
39
          GATTCÁCCTC AACGTTAATT GGGGTAATTC ATCCATTTTT TCCAATACAG
40
          TACÇÁGCTAC AGCTACGTCA TTAGATAATC TACAATCAAG TGATTTTGGT 2100
41
          TAYTTTGAAA GTGCCAATGC TTTTACATCT TCATTAGGTA ATATAGTAGG
42
          TETTAGAAAT TITAGTEGGA CTECAGGAGT GATAATAGAC AGATTTEAAT 2200
43
          ec{x}TATTCCAGT TACTGCAACA CTCGAGGCTG AATATAATCT GGAAAGAGC{f G}
44
          CAGAAGGCGG TGAATGCGCT GTTTACGTCT ACAAACCAAC TAGGGCTAAA 2300
          AACAAATGTA ACGGATTATC ATATTGATCA AGTGTCCAAT TTAGTTACGT
45
          ATTTATCGGA TGAATTTTGT CTGGATGAAA AGCGAGAATT GTCCGAGAAA 2400
          GTCAAACATG CGAAGCGACT CAGTGATGAA CGCAATTTAC TCCAAGATTC
          AAATTTCAAA GACATTAATA GGCAACCAGA ACGTGGGTGG GGCGGAAGTA 2500
          CAGGGATTAC CATCCAAGGA GGGGATGACG TATTTAAAGA AAATTACGTC
          ACACTATCAG GTACCTTTGA TGAGTGCTAT CCAACATATT TGTATCAAAA 2600
          AATCGATGAA TCAAAATTAA AAGCCTTTAC CCGTTATCAA TTAAGAGGGT
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ATATCGAAGA TAGTCAAGAC TTAGAAATCT ATTTAATTCG CTACAATGCA 2700 AAACATGAAA CAGTAAATGT GCCAGGTACG GGTTCCTTAT GGCCGCTTTC AGCCCAAAGT CCAATCGGAA AGTGTGGAGA GCCGAATCGA TGCGCGCCAC 2800 ACCTTGAATG GAATCCTGAC TTAGATTGTT CGTGTAGGGA TGGAGAAAAG TGTGCCCATC ATTCGCATCA TTTCTCCTTA GACATTGATG TAGGATGTAC 2900 AGACTTAAAT GAGGACCTAG GTGTATGGGT GATCTTTAAG ATTAAGACGC AAGATGGECA CGCAAGACTA GGGAATCTAG AGTTTCTCGA AGAGAAACCA 3000 TTAGTAGGAG AAGCGCTAGC TCGTGTGAAA AGAGCGGAGA AAAAATGGAG AGACAAACGT GAAAAATTGG AATGGGAAAC AAATATCGTT TATAAAGAGG 3100 CAAAAGAATC TGTAGATGCT TTATTTGTAA ACTCTCAATA TGÁTCAATTA CAAGCGGATA CGAATATTGC CATGATTCAT GCGGCAGATA AACGTGTTCA 3200 TAGCATTCGA GAAGCTTATC TGCCTGAGCT GTCTGTGATT/CCGGGTGTCA ATGCGGCTAT TTTTGAAGAA TTAGAAGGGC GTATTTTCAC TGCATTCTCC 3300 CTATATGATG CGAGAAATGT CATTAAAAAT GGTGATT7TA ATAATGGCTT ATCCTGCTGG AACGTGAAAG GGCATGTAGA TGTAGAAGAA CAAAACAACC 3400 AACGTTCGGT CCTTGTTGTT CCGGAATGGG AAGCAGAAGT GTCACAAGAA GTTCGTGTCT GTCCGGGTCG TGGCTATATC CTTCGTGTCA CAGCGTACAA 3500 GGAGGGATAT GGAGAAGGTT GCGTAACCAT TCATGAGATC GAGAACAATA CAGACGAACT GAAGTTTAGC AACTGCGTAG AAGAGGAAAT CTATCCAAAT 3600 AACACGGTAA CGTGTAATGA TTATACIGTA AATCAAGAAG AATACGGAGG TGCGTACACT TCTCGTAATC GAGGATATAA CGAAGCTCCT TCCGTACCAG 3700 CTGATTATGC GTCAGTCTAT GAAGAAAAAT CGTATACAGA TGGACGAAGA GAGAATCCTT GTGAATTTAA CAGAGGATAT AGGGATTACA CGCCACTACC 3800 AGTTGGTTAT GTGACAAAAG AAT/TAGÁATA CT/CCCAGAA ACCGATAAGG TATGGATTGA GATTGGAGAA ACGGAGAGGAA ZATTTATCGT GGACAGCGTG 3900 GAATTACTCC TTATGGAGGA A (And HD/73).

27. A recombinant DNA transfer vector comprising DNA having the following nucleotide sequence or equivalent nucleotide sequences containing bases whose translated region codes for the same amino acid sequence:

ATG GATAACAATC 400 6 (start HD-73) CGAACATCAA/TGAATGCATT CCTTATAATT GTTTAAGTAA CCCTGAAGTA 7 GAAGTATTAK GTGGAGAAAG AATAGAAACT GGTTACACCC CAATCGATAT 500 8 TTCCTTGTCG CTAACGCAAT TTCTTTTGAG TGAATTTGTT CCCGGTGCTG 9 GATTTGTGTT AGGACTAGTT GATATAATAT GGGGAATTTT TGGTCCCTCT 600 10 CAATGGGACG CATTTCTTGT ACAAATTGAA CAGTTAATTA ACCAAAGAAT 11 AGAAGÁATTC GCTAGGAACC AAGCCATTTC TAGATTAGAA GGACTAAGCA 700 12 ATCT/TTATCA AATTTACGCA GAATCTTTTA GAGAGTGGGA AGCAGATCCT 13 ACTANTCCAG CATTAAGAGA AGAGATGCGT ATTCAATTCA ATGACATGAA 800 14 CAGTGCCCTT ACAACCGCTA TTCCTCTTTT TGCAGTTCAA AATTATCAAG 15 T/TCCTCTTTT ATCAGTATAT GTTCAAGCTG CAAATTTACA TTTATCAGTT 16 TTGAGAGATG TTTCAGTGTT TGGACAAAGG TGGGGATTTG ATGCCGCGAC 17 TATCAATAGT CGTTATAATG ATTTAACTAG GCTTATTGGC AACTATACAG 1000 18 ATTATGCTGT ACGCTGGTAC AATACGGGAT TAGAACGTGT ATGGGGACCG 19 20 GATTCTAGAG ATTGGGTAAG GTATAATCAA TTTAGAAGAG AATTAACACT 1100 AACTGTATTA GATATCGTTG CTCTGTTCCC GAATTATGAT AGTAGAAGAT 21

22	ATCCAATTCG:	AACAGTTTCC	CAATTAACAA	GAGAAATTTA	TACAAACCCA	1209
23	GTATTAGAAA	ATTTTGATGG	TAGTTTTCGA	GGCTCGGCTC	HUUULHIHUH	
	AAGAAGTATT	AGGAGTCCAC	ATTTGATGGA	TATACTTAAC	AGTATAACCA	1/300
24	TCTATACGGA	TGCTCATAGG	GGTTATTATT.	ATTEGTCAGG	GCATCAAATAY	
25 26	ATGGCTTCTC	CTGTAGGGTT	TTCGGGGCCA	GAATTCACTT	TICCGCIAJA	1400
27	TEGAACTATE	GGAAATGCAG	CTCCACAACA	ACGTATTGTT	GCTCAAC/AG	
28	GTCAGGGCGT	GTATAGAACA	TTATCGTCCA	CTTTATATAG	AAGACQ/TTTT	1500
	AATATAGGGA	TAAATAATCA	ACAACTATCT	GTTCTTGACG	GGAÇAGAATT	
29	TECTTATEGA	ACCTCCTCAA	ATTTGCCATC	CGCTGTATAC	AGAAAAGCG	1600
30 31	GAACGGTAGA	TTCGCTGAAT	GAAATACCGC	CACAGAATAA	CAACGTGCCA	
32	CCTAGGCAAG	AATTTAGTCA	TCGATTAAGC	CATGTTTCAA	/TGITTUGITU	1700
	AGGCTTTAGT	AATAGTAGTG	TAAGTATAAT	AAGAGCT (er	nd hd-73)	
33	(start		CCAACGT	TTTCTTG@CA	GCATCGCAGT	1900
34 35	GCTGAATTTA	ATCATATAAT	TCCTTCATCA	,	AAATACCTTT	
	ΔΑΓΔΑΔΑΤΓΤ	ACTAATCTTG	GCTCTGGAAC	TTCTGTCGTT	AAAGGACCAG	2000
36 37	SATTTACAGG	AGGAGATATT	CTTCGAAGAA	CTTÉACCTGG	CCAGATTTCA	
		TAGATATTAC	TGCACCATTA	TEACAAAGAT	ATCGGGTAAG	2100
38		GCTTCTACTA		ATTCCATACA	TCAATTGACG	
39			AATTTTTCAG	CAACTATGAG	TAGTGGGAGT	2200
40	GAAGACCTAT		TAGGACTGTA		CTCCGTTTAA	
41	AATTTACAGT		TATTTACGTT	AAGTGCTCAT	GTCTTCAATT	2300
42	CTTTTCAAAT		GATCGAATTG	AATTTGTTCC	GGCAGAAGTA	
43	CAGGCAATGA		TITAGAAAGA	GCACAAAAGG	CGGTGAATGA	2400
44	ACCTTTGAGG	,	1 .	AAAAACAGAT	GTGACGGATT	
45	GCTGTTTACT	TCTTCCAATC	AAATCGGGTT	AGTGTTTATC	AGATGAATTT	2500
46	ATCATATTGA	TCAAGTATCC	AATTTAGTTG		ATGCGAAGCG	
47	TGTCTGGATG	AAAAACAAGA	ATTGTCCGAG		AGAGGGATCA	2600
48	ACTTAGTGAT	GAGCGGAATT	TACTTCAAGA		TACCATCCAA	2000
49	ATAGACAACT	AGACCATGGC	TGGAGAGGAA		TEGETACETT	2700
50	GGAGGCGATG	ACGTAT/TCAP	-AGAGAATTAC	GTTACGCTAT		<u> </u>
51	TGATGAGTGC	TATCEAACET	ATTTATATCA		GAGTCGAAAT	2000
52	TAAAAGCCTA	TAÇĆCGIZAT	CAATTAAGAG		AGATAGTCAA	2800
53	GACTTAGAAA	TØŤATTTAAT	TCGCTACAAT		AAACAGTAAA	2000
54	TGTGCCAGGT	ACGGGTTCCT	TATGGCCGCT		AGTCCAATCG	2900
55	GAAAGTGTGĢ	/AGAGCCGAAT		CACACCTTGA		
56	GACTTAGAZÍ	GTTCGTGTAG	GGATGGAGAA	AAGTGTGCCC	ATCATTCGCA	
57	TCATTTCTCC	TTAGACATTG	ATGTAGGATG	TACAGACTTA	AATGAGGACC	
58	TAGGTGŤATG	GGTGATCTTT	AAGATTAAGA	CGCAAGATGG	GCACGCAAGA	3100
59	CTACCCAATC	TARAGTTTCT		CCATTAGTAG	GAGAAGUGU	
60	AGCTCGTGTG	AAAAGAGCGG	AGAAAAAATG	GAGAGACAAA	CGTGAAAAAT	3200
61	TRÉAATRICA	AACAAATATC	GTTTATAAAG	AGGCAAAAGA	AICIBIAGAI	
	GÉTTTATTTG	TAAACTCTCA	ATATGATCAA	TTACAAGCGG	ATACGAATAT	3300
62 63	TECCATEATT	CATECGGCAG	ATAAACGTGT	TCATAGCATT	CGAGAAGUTT	
64	ATCTECCTEA	GCTGTCTGTG	ATTCCGGGTG	TCAATGCGGC	TATTTTTGAA	3400
65	CANTIAGAAG	GGCGTATTTT	CACTECATTO	TCCCTATATG	ATGCGAGAAA	
66	TETENTANA	DATESTEATT	TTAATAATGG	CTTATCCTGC	TEGAACGTGA	3500
	AAGCCCATCT		GARCAGACA	ACCAACGTTC	GGTCCTTGTT	
67	HHUDDOCAAT	#GH G HGHH		GAAGTTCGTG	TCTGTCCGGG	3600
68	CITCUSSAAT	ATCCTTCGTC	TCACARCRTA	CAAGGAGGGA	TATGGAGAAG	
69/	ואו שבובו בישו	HILLIILGIG		ATACAGACGA	ACTGAAGTTT	3700
7⁄0 ⁄71	GITGUGTAAU	CHITCHIGAG	AATOTATOOA	. <u> </u>	TAACGTGTAA	
<i>/</i> 71	AGCAACTGCG	TAGAAGAGGA	HAILIHILLH	AATAACACGG	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	

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TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800 73 ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC 74 TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 2900 75 TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA 76 AAGAATTAGA ATACTTCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000 77 GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA 78 GGAA (end HD-1).

28. A recombinant DNA transfer vector comprising DNA having the following nucleotide sequence or equivalent nucleotide sequences containing bases whose translated region codes for the same amino acid sequence:

ATG GATAACAATC 400 (start HD-73) CGAACATCAA TGAATGCATT CCTTATAATT GTTTAAGTAA CCCTGAAGTA GAAGTATTAG GTGGAGAAAG AATAGAAACT GGTTACACCC CAATCGATAT 500 TTCCTTGTCG CTAACGCAAT TTCTTTTGAG TGAATTIGTT CCCGGTGCTG GATTTGTGTT AGGACTAGTT GATATATAT GGGGAATTTT TGGTCCCTCT 600 CAATGGGACG CATTTCTTGT ACAAATTGAA CAGTTAATTA ACCAAAGAAT AGAAGAATTC GCTAGGAACC AAGCCATTTC TAGATTAGAA GGACTAAGCA 700 ATCTTTATCA AATTTACGCA GAATCTCTTA GAGAGTGGGA AGCAGATCCT CAGTGCCCTT ACAACCGCTA/TTCCTTTTT TGCAGTTCAA AATTATCAAG TTCCTCTTTT ATCAGTATAT GTTCAAGCTG CAAATTTACA TTTATCAGTT 900 TTGAGAGATG TTTCAGTGTT TEGACAAAGG TGGGGATTTG ATGCCGCGAC TATCAATAGT CGTTATĢÁTG ATTTAACTAG GCTTATTGGC AACTATACAG 1000 ATTATGCTGT ACGCTGGTAC AATACGGGAT TAGAACGTGT ATGGGGACCG GATTCTAGAG ATTGGGTAAG GTATAATCAA ITTAGAAGAG AATTAACACT 1100 AACTGTATTA GAŢÁTCGTTG CTCTGTTCCC GAATTATGAT AGTAGAAGAT ATCCAATTCG AACAGTTTCC CAATTAACAA GAGAAATTTA TACAAACCCA 1200 AGGAAGTATT/AGGAGTCCAC ATTTGATGGA TATACTTAAC AGTATAACCA 1300 TCTATACGGA TGCTCATAAA GGGGAATATT ATTGGTCAGG GCATCAAATA ATGGCTTÇÍC CTGTAGGGTT TTCGGGGCCA GAATTCACTT TTCCGCTATA 1400 TGGAACTATG GGAAATGCAG CTCCACAACA ACGTATTGTT GCTCAACTAG GTCAGGGCGT GTATAGAACA TTATCGTCCA CTTTATATAG AAGACCTTTT 1500 AATATAGGGA TAAATAATCA ACAACTATCT GTTCTTGACG GGACAGAATT TGC/TATGGA ACCTCCTCAA ATTTGCCATC CGCTGTATAC AGAAAAAGCG 1600 GAÁCGGTAGA TICGCIGGAI GAAATACCGC CACAGAATAA CAACGIGCCA CÉTAGGCAAG GATTTAGTCA TCGATTAAGC CATGTTTCAA TGTTTCGTTC 1700 AGGCTTTAGT AATAGTAGTG TAAGTATAAT AAGAGCT (end hd-73) CCAACGT TTTCTTGGCA GCATCGCAGT 1900 (start HD-1) GCTGAATITA ATAATATAAT TCCTTCATCA CAAATTACAC AAATACCTTT AACAAAATCT ACTAATCTTG GCTCTGGAAC TTCTGTCGTT AAAGGACCAG 2000 GATTTACAGG AGGAGATATT CTTCGAAGAA CTTCACCTGG CCAGATTTCA ACCTTAAGAG TAAATATTAC TGCACCATTA TCACAAAGAT ATCGGGTAAG 2100 AATTCGCTAC GCTTCTACTA CAAATTTACA ATTCCATACA TCAATTGACG

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GAAGACCTAT TAATCAGGGT AATTITTCAG CAACTATGAG TAGTGGGAGT 2200
AATTTACAGT CCGGAAGCTT TAGGACTGTA GGTTTTACTA CTCCGTTTAA
CTTTTCAAAT GGATCAAGTG TATTTACGTT AAGTGCTCAT GTCTTCAATT 2000
CAGGCAATGA AGTTTATATA GATCGAATTG AATTTGTTCC GGCAGAAGTA
ACCTTTGAGG CAGAATATGA TTTAGAAAGA GCACAAAAGG CGGTGAATGA 2400
GCTGTTTACT TCTTCCAATC AAATCGGGTT AAAAACAGAT GTGACGGA/TT
ATCATATTGA TCAAGTATCC AATTTAGTTG AGTGTTTATC AGATGAØTTT 2500
TGTCTGGATG AAAAACAAGA ATTGTCCGAG AAAGTCAAAC ATGCGAAGCG
ACTTAGTGAT GAGCGGAATT TACTTCAAGA TCCAAACTTC AGAGGGATCA 2600
ATAGACAACT AGACCGTGGC TGGAGAGGAA GTACGGATAT TAÇCATCCAA
GGAGGCGATG ACGTATTCAA AGAGAATTAC GTTACGCTAT TØGGTACCTT 2700
TGATGAGTGC TATCCAACGT ATTTATATCA AAAAATAGAT XAGTCGAAAT
TAAAAGCCTA TACCCGTTAT CAATTAAGAG GGTATATCGA/AGATAGTCAA 2800
GACTTAGAAA TCTATTTAAT TCGCTACAAT GCAAAACAŢĠ AAACAGTAAA
TGTGCCAGGT ACGGGTTCCT TATGGCCGCT TTCAGCCCAA AGTCCAATCG 2900
GAAAGTGTGG AGAGCCGAAT CGATGCGCGC CACACCXTGA ATGGAATCCT
GACTTAGATT GTTCGTGTAG GGATGGAGAA AAGTG/GCCC ATCATTCGCA 3000
TCATTTCTCC TTAGACATTG ATGTAGGATG TACAGACTTA AATGAGGACC
TAGGTGTATG GGTGATCTTT AAGATTAAGA CGÇÁAGATGG GCACGCAAGA 3100
CTAGGGAATC TAGAGTTTCT CGAAGAGAAA CÇATTAGTAG GAGAAGCGCT
AGCTCGTGTG AAAAGAGCGG AGAAAAAAT GAGAGACAAA CGTGAAAAAT 3200
TGGAATGGGA AACAAATATC GTTTA/AA/AG/AGGCAAAAGA ATCTGTAGAT
GCTTTATTTG TAAACTCTCA ATATÉATÇAÉ TTACAAGCGG ATACGAATAT 3300
TGCCATGATT CATGCGGCAG ATAMACGTET TCATAGCATT CGAGAAGCTT
ATCTGCCTGA GCTGTCTGTG ATTCCGGGTG TCAATGCGGC TATTTTTGAA
GAATTAGAAG GGCGTATTTT CACTGCATTC TCCCTATATG ATGCGAGAAA
TGTCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500
AAGGGCATGT AGATGTAGAA GAAÇAAAA<del>CA</del> ACCAACGTTC GGTCCTTGTT
CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600
TOGTGGOTAT ATCOTTOGTG TOACAGEGTA CAAGGAGGGA TATGGAGAAG
GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700
AGCAACTGCG TAGAAGAGGA/AATCTATCCA AATAACACGG TAACGTGTAA
TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800
ATCGAGGATA TAACGAAĢĆT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC
TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900
TAACAGAGGG TATAGGGATT ACACGCCACT ACCAGTTGGT TATGTGACAA
AAGAATTAGA ATAC/TCCCA GAAACCGATA AGGTATGGAT TGAGATTGGA 4000
GAAACGGAAG GAACATTTAT CGTGGACAGC GTGGAATTAC TCCTTATGGA
GGAA (end HD-/1).
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29. The DNA transfer vector of claim 25 transferred to and replicated in a prokaryotic or lower eukaryotic microorganism.

1	30. The DNA transfer vector of claim 26 trans-
2.	ferred to and replicated in a prokaryotic or lower
3	eukaryotic microorganism.
1	31. The DNA transfer vector of claim 27 trans-
2	ferred to and replicated in a prokaryotic or lower
3	eukaryotic microorganism.
1	32. The DNA transfer vector of claim 28 trans-
2	ferred to and replicated in a prokaryotic or lower
3	eukaryotic microorganism.
1	33. Plasmid pEWl as shown in FIGURE 1 of the
2	drawings.
1	34. Plasmid pEW2 as shown in FIGURE 2 of the
2	drawings.
1	35. Plasmid pEW3 as shown in FIGURE 3 of the
2	drawings.
1	36. Plasmid pEW4 as shown in FIGURE 4 of the
2	drawings. /
1	37. Plasmid pACB-1, having the construction of
2	plasmid pEW3 except that the DNA encoding aspartic
3	acid at position 411 is converted to encode asparagine,
4	and the DNA encoding glycine at position 425 is con-
5	verted to encode glutamic acid.

38. Plasmid pSYWl, having the construction of plasmid pEW3 except that the DNA encoding arginine at position 289 is converted to encode glycine, the DNA encoding arginine at position 311 is converted to encode lysine, and the DNA encoding tyrosine at position 313 is converted to encode glutamate.

1 2	39. A microorganism transformed by the transfer vector of claim 25.
1 2	40. A microorganism transformed by the transfer vector of claim 26.
1 2	41. A microorganism transformed by the transfer vector of claim 27.
1 2	42. A microorganism transformed by the transfer vector of claim 28.
1 2	43. \underline{E} . \underline{coli} (pEW3), a microorganism according to claim 39.
1 2	44. <u>E</u> . <u>coli</u> (pEW4), a microorganism according to claim 40.
1 2	45. <u>E</u> . <u>coli</u> (pACB-1), a microorganism according to claim 41.
1 2	46. E. coli (pSYWl), a microorganism according to claim 42.
1 2	47. A process for preparing pesticidal chimeric toxin EW3 having the following amino acid sequence:
3 4 5 6 7 8 9 10 11 12 13	M D N N P N I N E C I P Y N C L S E F V P G A G F V L E E E E E E E E E E E E E E E E E E

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PEFTFPLYGTMGNAAPQQRIVAQLGQGVY,
14
                 RRPFNIGINNQQLSVLDGT
15
                SAVYRKSGTVDSLDEIPPQNN
16
                HRLSHVSMFRSGFSNSSVS
                                             I/I
         RQGFS
17
18
          SWQHRSAEFNNIIFSSQITQIP
               SVVKGPGFTGGDILRRT
                                         SP
                                             /Q I
19
               APLSQR
                        YRVRIRYA
                                    ST
20
                 QGNFS
                          Т
                           M S
                              SG
                                 SN
                                       SG
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               Ν
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21
                                          ŃΕ
          PF
             NF
                 SNGS
                       SVFTLSAHVFNSG
                                             V
                                               Υ
22
         T
               AEVTFEAEYDLERAQKA
                                           NE
23
24
                                          LSDEFC
          I G L K T D V T D Y H I D Q V S N L V E
                                         C
25
                  EK V K H A K R L S D E R N / L L
                                          Ø
                                            DPNFR
            QELS
      GINRQLDRGWRGSTDIT
                                1066
                                      PDV
26
                                          F
                                            K
27
       LLGTFDECYPTYLY@KIDES,
                                      K L
                                         K
                                             Т
                                               RY Q
      LRGYIEDSQDLE
                        IYLIRYNA
                                       Ε
28
                                           V
29
30
      6 S L
           WFLSAQSPIGKCGEFNF
                                     С
                                      APH
             RDGE
                   K C
                       AHHSHHFS
                                     D
                                      I D
                                         V
                                           G
                                            С
                                              T
          SC
      EDLGVWVIFKIKTQDGHAR/LGNL
31
                                         EFL
                                             Ε
                                               Ε
32
      LVGEALARVKRAEKKWRD/KREKLEWET
                       FVNSQYZÓQL
              ESVDAL
                                    QADTN
33
                     EAYLPELSVIPGVNHH.
         DKRVHS
                  ΙR
34
               TAFSLYDARN
35
         GRIF
      N V K G H V D V E E Q N N/Q\R $
                              V L
36
                                 ٧
                                    P
                                      EWE
      VRVCPGRGYILRVTAYKEGYGEGCVTIHEI
ENNTDELKFSNCVEEEIYPNNTVTCNDYTV
NQEEYGGAYTSRNFGYNEAPSVPADYASVY
EEKSYTDGRRENPCEFNRGYRDYTPLPVGY
37
38
39
40
                       DKVWIEIGETEGTF
      VITKELEYFPE
                     7/
41
      ELLLMEE
42
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which comprises culturing a prokaryotic microbe hosting a recombinant DNA transfer vector, denoted pEW3, comprising DNA having the following nucleotide sequence or equivalent nucleotide sequences containing bases whose translated region codes for the same amino acid sequence:

49		(start	HD-73)	ATG	GATAACAATC	400
50	CGAĄĆATCAA	TGAATGCATT	CCTTATAATT	GTTTAAGTAA	CCCTGAAGTA	
51	GAAÆTATTAG	GTGGAGAAAG	AATAGAAACT	GGTTACACCC	CAATCGATAT	500
52	TTÆCTTGTCG	CTAACGCAAT	TTCTTTTGAG	TGAATTTGTT	CCCGGTGCTG	•
53	GÁTTTGTGTT	AGGACTAGTT	GATATAATAT	GGGGAATTTT	TEGTCCCTCT	900
54	,ĆAATGGGACG	CATTTCTTGT	ACAAATTGAA	CAGTTAATTA	ACCAAAGAAT	
55	/ AGAAGAATTC	GCTAGGAACC	AAGCCATTTC	TAGATTAGAA	GGACTAAGCA	700
56	ATCTTTATCA	AATTTACGCA	GAATCTTTTA	GAGAGTGGGA	AGCAGATCCT	
57	/ ACTAATCCAG	CATTAAGAGA	AGAGATGCGT	ATTCAATTCA	ATGACATGAA	800
58	/ CAGTGCCCTT	ACAACCGCTA	TTCCTCTTTT	TGCAGTTCAA	AATTATCAAG	
59	TTCCTCTTTT	ATCAGTATAT	GTTCAAGCTG	CAAATTTACA	TTTATCAGTT	900
60	TTGAGAGATG	TTTCAGTGTT	TGGACAAAGG	TGGGGATTTG	ATGCCGCGAC	

						/
61			ATTTAACTAG			1000
62	ATTATGCTGT	ACGCTGGTAC	AATACGGGAT	TAGAACGTGT	ATGGGGACCG	/
63	GATTCTAGAG	ATTGGGTAAG	GTATAATCAA	TTTAGAAGAG	AATTAACACT	1100
64	AACTGTATTA	GATATCGTTG	CTCTGTTCCC	GAATTATGAT	AGTAGAAGAT	
65	ATCCAATTCG	AACAGTTTCC	CAATTAACAA	GAGAAATTTA	TACAAACCCA	1200
66	GTATTAGAAA	ATTTTGATGG	TAGTTTTCGA	GGCTCGGCTC	AGGGCATAGA	
67	AAGAAGTATT	AGGAGTCCAC	ATTTGATGGA	TATACTTAAC	AGTATAACCA	1300
68	TCTATACGGA	TGCTCATAGG	GGTTATTATT	ATTGGTCAGG	GCATCAAATA	
69	ATGGCTTCTC	CTGTAGGGTT	TTCGGGGCCA	GAATTCACTT	· · · · · · · · · · · · · · · · · · ·	1400
70	TGGAACTATG	GGAAATGCAG	CTCCACAACA	ACGTATTGTT	GCTCAACTAG	
ŹĨ	GTCAGGGCGT	GTATAGAACA	TTATCGTCCA	CTTTATATAG	AARACCTTTT	1500
72	AATATAGGGA	TAAATAATCA	ACAACTATCT	GTTCTTGACG	GEACAGAATT	
73	TGCTTATGGA	ACCTCCTCAA	ATTTGCCATC	CGCTGTATAC	AGAAAAAGCG	1600
	GAACGGTAGA	TTCGCTGGAT	GAAATACCGC	CACAGAATAA	CAACGTGCCA	
74 75	CCTAGGCAAG	GATTTAGTCA	TCGATTAAGC	CATGTTTCAA	TGTTTCGTTC	1700
76	AGGCTTTAGT	AATAGTAGTG	TAAGTATAAT	AAGAGCT /(e)	nd hd-73)	
77	(start	HD-1)	CCAACGT	TTTCTT@GCA	GCATCGCAGT	1900
78	GCTGAATTTA	ATAATATAAT	TEETTEATEA	CAAATTACAC	AAATACCTTT	
79	AACAAAATCT	ACTAATCTTG	GCTCTGGAAC	TICTRICGIT	AAAGGACCAG	2000
80	GATTTACAGG	AGGAGATATT	CTTCGAAGAA	CTTEACCTGG	CCAGATTTCA	
81	ACCTTAAGAG	TAAATATTAC	TGCACÇÁTTA	TÇÁCAAAGAT	ATCGGGTAAG	2100
82	AATTCGCTAC	GCTTCTACTA	CAAAT/TTACA	ATTCCATACA	TÇAATTGACG	
83	GAAGACCTAT	TAATCAGGGT	AATT/TTTCAG	CAACTATGAG	/fagtgggagt	2200
84	AATTTACAGT	CCGGAAGCTT	TAGGACTG/	GGTTTTARTA	CTCCGTTTAA	
85	CTTTTCAAAT	GGATCAAGTG	TATTTACETT	AAGTECTCAT	GTCTTCAATT	2300
86	CAGGCAATGA	AGTTTATATA	GATCGAA/TG	AATTTGTTCC	GGCAGAAGTA	
87	ACCTTTGAGG	CAGAATATGA	TTTAGAAAGA	GCACAAAAGG	CGGTGAATGA	2400
88	GCTGTTTACT	TCTTCCAATC	AAATOGGGTT	AAAAACAGAT	GTGACGGATT	
89	ATCATATTGA	TCAAGTATCC	AATTTAGTTG	AGTGTTTATC	AGATGAATTT	2500
90	TGTCTGGATG	AAAAACAAGA	ATTGTCCGAG	AAAGTCAAAC	ATGCGAAGCG	
91	ACTTAGTGAT	GAGCGGAATT	TACTTCAAGA		AGAGGGATCA	2600
92	ATAGACAACT	AGACCGTGGC	#GGAGAGGAA	GTACGGATAT	TACCATCCAA	
93	GGAGGCGATG	ACGTATTCAR	AGAGAATTAC	GTTACGCTAT	TGGGTACCTT	2700
94	TGATGAGTGC	TATCCAACET	ATTTATATCA	AAAAATAGAT	GAGTCGAAAT	
95	TAAAAGCCTA	TACCCGTZAT	CAATTAAGAG	GGTATATCGA	AGATAGTCAA	2800
96	GACTTAGAAA	TCTATTAAT	TEGETACAAT	GCAAAACATG	AAACAGTAAA	
9 7	TGTGCCAGGT	ACGGGTTCCT	TATGGCCGCT	TTCAGCCCAA	AGTCCAATCG	2900
98			CGATGCGCGC		ATGGAATCCT	
99	GACTTAGATT	GTXCGTGTAG	GGATGGAGAA	AAGTGTGCCC	ATCATTCGCA	3000
100			ATGTAGGATG			
101					GCACGCAAGA	3100
102			CGAAGAGAAA			•
103					CGTGAAAAAT	3200
104			GTTTATAAAG			
105					ATACGAATAT	3300
106			ATAAACGTGT			
107	ATCTECCTEA	GCTGTCTGTG	ATTCCGGGTG	TCAATGCGGC	TATTTTTGAA	3400
108	GAATTAGAAG	GGCGTATTTT	CACTGCATTC	TCCCTATATG	ATGCGAGAAA	
109	TGXCATTAAA	AATGGTGATT	TTAATAATGG	CTTATCCTGC	TGGAACGTGA	3500
110			GAACAAAACA			
111					TCTGTCCGGG	3600
112					TATGGAGAAG	
113					ACTGAAGTTT	3700
114					TAACGTGTAA	• •
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TGATTATACT GTAAATCAAG AAGAATACGG AGGTGCGTAC ACTTCTCGTA 3800

ATCGAGGATA TAACGAAGCT CCTTCCGTAC CAGCTGATTA TGCGTCAGTC

TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT

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48. A process for preparing pesticidal chimeric toxin EW4 having the following amino acid sequence:

3 MDNNPNINECIP YNCLSNPEVE/ SEFVFGAG ISLSL TQFL L TGYTPID VDIIWGIFGPSQWDAFPVQIFQL INQR 5 I 67 ARNQAISRLEGLSNLY,Q-1Y A E S F R E W E A D PTNPALREEMRIQFND/MNS/ALTTAIPLL QNYQVPLLSVYVQAAXLHX 8 SVLRDVSVFG Q RWGFDAATINSRYND LTRUIGNYTDYAVRW 9 ERVWGFDSR/DWV/AYNQFRREL TL 10 GL RTVSQL LDIVALFSNYDSRKYRY TRE 11 PVLENFDGSFRGM/AQR/ NSITIYTDVHRGF/NY IEONIRQPHL Μ 12 T A S F V G F S G SGHQI 13 AFFLFGNAGNAA/ SL TGLGI ν 14 PEF G/S G/F/ ٧ II G 15 LSSPLYRRIIL E L ÆGT ASLTTNLPSTIY/RØ V D S L DV I PP 16 TML S Q A Α G AV ΥT VPPRAGESHRLS Н 17 I I TQ AE NNI A S D S IHR S SW 18 RPMF S T G \mathbf{D} V F: 5 G LFNGSV ISGF/GF G L Ν 19 NF L Т R YRV RVRYA 5 20 NRGYIEVPIHF/PST S TATSLDŇL Q S S D 21 HLNVNW6N55/ FSNTVFA SANAF /T S S LGNIV6 VRNFSGTAG 22 FGYFE AE RAQKAVNALF # A T Ε Y N L Ε IDRFEFIFV L 23 DYHIDQVSNLV TYLSDE TNV Ŧ NOLGLK 24 SEKVKHAKRLSDERNL LDEKRE/L 25 KUINROF GSTG I Τ IQGGDDVFK 26 27 ERGWG YVTLSGT/FDEC Y F T ΥL Υ Ģ K I DESKLK IYL YNAKHET 28 EDSQDL Ε I R YQLRGY/Í G T G S L W P L S A Q S P I G K C G E P N R C A P H 29 PILDC/SCRDGEKCAHHSHHFSLDIDV 30 IKTQDGHARLGNLEF 31 LNEDYGV WVIFK KWRDKREKLEWETN K P L V/G E A L A R V K R A E K 32 I V Y K E A K E S V D A L F V N S Q Y D Q L Q A D T N I A M 33 YLPELSVIPGVNAAIF 34 IHA'ADKRVHSIR Ε Α KNGDF YDARNV 35 Т AFS L Ι EGRI F Ε Ε Q N Q R SVL VVPEW G ٧ DV Ν 36 WNVK Н RVT AYK E GYGE G PGRG Υ ΙL Q/EVRVC 37 VEEEIYPNNT ٧ T C SNC EIENNTDE LKF 38 RNRGYNEAPS V P YGGA YTS

DGRRENPCEFNRGYRDYTPLPV

GYVTKELEYFPETDKVWIEIGETEGTFIVD

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86 87 which comprises culturing a prokaryotic microbe hosting a recombinant DNA transfer vector, denoted pEW4, comprising DNA having the following nucleotide sequence or equivalent nucleotide sequences containing bases whose translated region codes for the same amino acid sequence:

ATGG ATAACAATCV GAACATCAAT (start HD-1) GAATGCATTC CTTATAATTG TTTAAGTAAC CCTGAAGTAG AAGTATTAGG 600 TGGAGAAAGA ATAGAAACTG GTTACACCCC AATCGATÁTT TCCTTGTCGC TAACGCAATT TCTTTTGAGT GAATTTGTTC CCGGTGCTGG ATTTGTGTTA 700 GGACTAGTTG ATATAATATG GGGAATTTTT GGTCZCTCTC AATGGGACGC ATTTCCTGTA CAAATTGAAC AGTTAATTAA CCAAAGAATA GAAGAATTCG 800 CTAGGAACCA AGCCATTTCT AGATTAGAAG GACTAAGCAA TCTTTATCAA ATTTACGCAG AATCTTTTAG AGAGTGGGAA @CAGATCCTA CTAATCCAGC 900 ATTAAGAGAA GAGATGCGTA TTCAATTCAA/TGACATGAAC AGTGCCCTTA CAACCGCTAT TCCTCTTTTG GCAGTTCAĢÁ ATTATCAAGT TCCTCTTTTA 1000 TCAGTATATG TTCAAGCTGC AAATTTAÇÁT TTATCAGTTT TGAGAGATGT TTCAGTGTTT GGACAAAGGT XGGGGATYTGA TGCCGCGACT ATCAATAGTC 1100 GTTATAATGA TTTAACTAGG/CTTAT/GGCA ACTATACAGA TTATGCTGTG CGCTGGTACA ATACGGGAT/ AGAÇCGTGTA TGGGGACCGG ATTCTAGAGA 1200 TTGGGTAAGG TATAATCAAT TTAGAAGAGA GCTAACACTT ACTGTATTAG ATATEGTTGE TETATTET/CA AATTATGATA ETEGAAGGTA TECAATTEGA 1300 ACAGTTTCCC AATTAACAAGIAGAAATTTAT ACGAACCCAG TATTAGAAAA TTTTGATGGT AGTTTTCGTG GAATGACTCA GAGAATAGAA CAGAATATTA 1400 GGCAACCACA TCTTATGGAT ATCCTTAATA GTATAACCAT TTATACTGAT GTGCATAGAG GCTTTAATTA TTGGTCAGGG CATCAAATAA CAGCTTCTCC 1500 TGTAGEGTTT TCAGGACSAG AATTCGCATT CCCTTTATTT GGGAATGCGG GGAATGCAGC TCCACCCGTA CTTGTCTCAT TAACTGGTTT GGGGATTTTT 1600 AGAACATTAT CTICACCTTT ATATAGAAGA ATTATACTTG GTTCAGGCCC AAATAATCAG GAACTGTTTG TCCTTGATGG AACGGAGTTT TCTTTTGCCT CCCTAACGAC CAACTTGCCT TCCACTATAT ATAGACAAAG GGGTACAGTC GATTCACTAG/ATGTAATACC GCCACAGGAT AATAGTGTAC CACCTCGTGC 1800 GGGATTTAGÉ CATCGATTGA GTCATGTTAC AATGCTGAGC CAAGCAGCTG GAGCAGTYTA CACCTTGAGA GCTCAACGT (stop HD-1) (start HD-73) CCT ATGTTCTCTT GGATACATCG TAGTGCTGAA TTTAATAATA TAATTGCATC GGATAGTATT 1800 ACTCÁAATCC CTGCAGTGAA GGGAAACTTT CTTTTTAATG GTTCTGTAAT TTÇÁGGACCA GGATTTACTG GTGGGGACTT AGTTAGATTA AATAGTAGTG 1900 GAAATAACAT TCAGAATAGA GGGTATATTG AAGTTCCAAT TCACTTCCCA PÉGACATETA CCAGATATEG AGTTEGTGTA EGGTATGETT ETGTAACECE GATTCACCTC AACGTTAATT GGGGTAATTC ATCCATTTTT TCCAATACAG TACCAGCTAC AGCTACGTCA TTAGATAATC TACAATCAAG TGATTTTGGT 2100 TATTTTGAAA GTGCCAATGC TTTTACATCT TCATTAGGTA ATATAGTAGG TGTTAGAAAT TTTAGTGGGA CTGCAGGAGT GATAATAGAC AGATTTGAAT 2200 TTATTCCAGT TACTGCAACA CTCGAGGCTG AATATAATCT GGAAAGAGCG

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CAGAAGGCGG TGAATGCGCT GTTTACGTCT ACAAACCAAC TAGGGCTAAA 2300
AACAAATGTA ACGGATTATC ATATTGATCA AGTGTCCAAT TTAGTTACGT
ATTTATCGGA TGAATTTTGT CTGGATGAAA AGCGAGAATT GTCCGAGAAA 2400
GTCAAACATG CGAAGCGACT CAGTGATGAA CGCAATTTAC TCCAAGATTC
AAATTTCAAA GACATTAATA GGCAACCAGA ACGTGGGTGG GGCGGAAGTA 2500
CAGGGATTAC CATCCAAGGA GGGGATGACG TATTTAAAGA AAATTACGTC
ACACTATCAG GTACCTTTGA TGAGTGCTAT CCAACATATT TGTATCAAAA
AATCGATGAA TCAAAATTAA AAGCCTTTAC CCGTTATCAA TTAAGAGGGT
ATATCGAAGA TAGTCAAGAC TTAGAAATCT ATTTAATTCG CTACAATGCA 2700
AAACATGAAA CAGTAAATGT GCCAGGTACG GGTTCCTTAT GGCQGCTTTC
AGCCCAAAGT CCAATCGGAA AGTGTGGAGA GCCGAATCGA TGZGCGCCAC 2800
ACCTTGAATG GAATCCTGAC TTAGATTGTT CGTGTAGGGA TØGAGAAAAG
TGTGCCCATC ATTCGCATCA TTTCTCCTTA GACATTGATG /AGGATGTAC 2900
AGACTTAAAT GAGGACCTAG GTGTATGGGT GATCTTTAAG ATTAAGACGC
AAGATGGGCA CGCAAGACTA GGGAATCTAG AGTTTCTCGA AGAGAAACCA 3000
TTAGTAGGAG AAGCGCTAGC TCGTGTGAAA AGAGCGGAGA AAAAATGGAG
AGACAAACGT GAAAAATTGG AATGGGAAAC AAATATØGTT TATAAAGAGG 3100
CAAAAGAATC TGTAGATGCT TTATTTGTAA ACTCT CAATA TGATCAATTA
CAAGCGGATA CGAATATTGE CATGATTCAT GCGGCAGATA AACGTGTTCA 3200
TAGCATTOGA GAAGOTTATO TGCCTGAGOT GTOTGTGATT COGGGTGTCA
ATGCGGCTAT TTTTGAAGAA TTAGAAGGGC GTATTTTCAC TGCATTCTCC 3300
CTATATGATG CGAGAAATGT CATTAAAAAT ØGTGATTTTA ATAATGGCTT
ATCCTGCTGG AACGTGAAAG GGCATGJAGA/TGTAGAAGAA CAAAACAACC 3400
AACGTTCGGT CCTTGTTGTT CCGGAATGG AAGCAGAAGT GTCACAAGAA
GTTCGTGTCT GTCCGGGTCG TGGØTATATE CTTCGTGTCA CAGCGTACAA 3500
GGAGGGATAT GGAGAAGGTT GCÉTAACCAT TCATGAGATC GAGAACAATA
CAGACGAACT GAAGTTTAGC AACTGOGTAG AAGAGGAAAT CTATCCAAAT 3600
AACACGGTAA CGTGTAATGA /TATØCTGTA AATCAAGAAG AATACGGAGG
TECETACACT TETESTAATE/GAGZATATAA CGAAGETEET TEEGTACCAG 3700
CTGATTATGC GTCAGTCTAT GAAGAAAAT CGTATACAGA TGGACGAAGA
GAGAATCCTT GTGAATTTAÁ ÇÁØAGGGTAT AGGGATTACA CGCCACTACC 3800
AGTTGGTTAT GTGACAAAAG AATTAGAATA CTTCCCAGAA ACCGATAAGG
TATGGATTGA GATTGGAGAA ACGGAAGGAA CATTTATCGT GGACAGCGTG 3900
GAATTACTCC TTATGGAGRA A (end HD-73).
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49. A process for preparing pesticidal chimeric toxin ACB-1 having the following amino acid sequence:

MDNNPXINECIPYNCLSNPEVEVLGGERIE T G Y T F/ 'I DISLSLTQFLLSEFVFGAGFVLGL V D I I 🖈 G I F G P S Q W D A F L V Q I E Q L I N Q R I E E AR NY Q A I S R L E G L S N L Y Q I Y A E S F R E W E A D TNF ALREEMRIQFNDMNSALTTAIPLFAV Q N Y/Q V P L L S V Y V Q A A N L H L S V L R D V S V F G Q FDAATINSRYNDLTRLIGNYTDYAVRW TG RVWGPDS RYNOFRREL L Ε RDW V *p* i valfpnydsrrypirt vs**altreiyt** n ENFDGSFRGSAQGIERSIRSPHLMDIL S TIYTDAHRGYYYWSGHQIMASPVGFSG "PEFTFPLY GTMGNAAPQQRIVAQLGQGVYR

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TLYRRPFNIGINNQQLSVLDGTEFA NEIPPQNNNV TSSNLPSAVYRKSGTVDSL FSHRLSHVSMFRSGF5NSS V S I FSWQHRSAEFNNIIFSSQITQIPL V V K G P G F T G G D I L R R T S P G S T YASTTNL F TS SQRYRVRIR Т APL NLQSGS/F QGNFSAT M S 5 G S GRPIN ΝE SNGSSVFTLS AHVFNSG VTFEAEYDLERAQKAY NE RIEFVPAE NQIGLKTDVTDYHIDQVSNLVE, LSD E F C /C EKVKHAKRLSDERNXLQDPNFR EKQELS DRGWRGSTDITI@GGDDVFKE LGTFDECYPTYLY@KIDES/KLKAY T IYLIRYNAKHET ٧ NV DSQDLE LRGYIE GKCGEFN FX С APH LWPLSAQSPI L D C S C R D G E K C A H H S H H F S, DIDVG С Æ EDLGVWVIFKIKTQDGHAKLGNL Ε FL LVGEALARVKRAEKKWRI/KREKL E W E TN ADTNIAMIH YKEAKESVDALFVNSQYÆQLQ DKRVHSIREAYLPEU IPGVNAAI SV LEGRIFTAFSLYDARNNIKNGDFNNGL LPEWEAE N V K G H V D V E E Q N N Q R \$ VLV EGCVT IHEI RVAA /Y K Y I L Ε G Y G VRVCPGRG ENNTDELKFSNCYEEI Т V T YPNN N Q E E Y G G A Y T S R N R G Y N E A P S V P A D EEKSYTDGRRENPEEFNRGYRDY TPLPVGY 'V W I E I G E T E G T F I V D S V VTKELEYFPET/DK/ ELLLMEE

which comprises dulturing a prokaryotic microbe hosting a recombinant DNA transfer vector, denoted pACB-1, comprising DNA having the following nucleotide sequence or equivalent nucleotide sequences containing bases whose translated region codes for the same amino acid sequence:

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TATCAATAGT CGTTATAATG ATTTAACTAG GCTTATTGGC AACTATACAG 1000
ATTATGCTGT ACGCTGGTAC AATACGGGAT TAGAACGTGT ATGGGGACCG
GATTCTAGAG ATTGGGTAAG GTATAATCAA TTTAGAAGAG AATTAACACT 1100
AACTGTATTA GATATCGTTG CTCTGTTCCC GAATTATGAT AGTAGAAGAT/
ATCCAATTCG AACAGTTTCC CAATTAACAA GAGAAATTTA TACAAACCCA 1200
GTATTAGAAA ATTTTGATGG TAGTTTTCGA GGCTCGGCTC
AAGAAGTATT AGGAGTCCAC ATTTGATGGA TATACTTAAC AGTATAACCA 1300
TCTATACGGA TGCTCATAGG GGTTATTATT ATTGGTCAGG GCATCAAATA
ATGGETTETE CTGTAGGGTT TTCGGGGCCA GAATTCACTT TTCCECTATA 1400
TGGAACTATG GGAAATGCAG CTCCACAACA ACGTATTGTT GCTCAACTAG
GTCAGGGCGT GTATAGAACA TTATCGTCCA CTTTATATAG AAGACCTTTT 1500
AATATAGGGA TAAATAATCA ACAACTATCT GTTCTTGACG GGACAGAATT
TECTTATEGA ACCTECTEAA ATTTECEATE EGETETATAE AGAAAAAGEG 1600
GAACGETAGA TICGCIGAAT GAAATACCGC CACAGAATAA CAACGIGCCA
CCTAGGCAAG AATTTAGTCA TCGATTAAGC CATGTTTCAA TGTTTCGTTC 1700
AGGCTTTAGT AATAGTAGTG TAAGTATAAT AAGAGCT/ (end hd-73)
(start HD-1) CCAACGT TTTCTTGGCA GCATCGCAGT 1900
GCTGAATTTA ATAATATAAT TCCTTCATCA CAAATTACAC AAATACCTTT
AACAAAATCT ACTAATCTTG GCTCTGGAAC TTCTGTCGTT AAAGGACCAG 2000
GATTTACAGE AGGAGATATT CTTCGAAGAA CTTCACCTGG CCAGATTTCA
ACCITAGGG TAGATATTAC TGCACCATTA TZACAAAGAT ATCGGGTAAG 2100
AATTEGETAE GETTETAETA CAAATTTACA ATTECATACA TEAATTGAEG
GAAGACCTAT TAATCAGGGT AATTITYCAG CAACTATGAG TAGTGGGAGT 2200
AATTTACAST CCGGAAGCTT TAGGACTGTA GGTTTTACTA CTCCGTTTAA
CTITICAAAT GGATCAAGTG TATTTACGTT AAGTGCTCAT GTCTTCAATT 2300
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GAAAGTGTGG AGAECCGAAT CGATGCGCGC CACACCTTGA ATGGAATCCT
GACTTAGATT GT/CGTGTAG GGATGGAGAA AAGTGTGCCC ATCATTCGCA 3000
TCATTTCTCC TAGACATTE ATETAGGATE TACAGACTTA AATGAGGACC
TAGGTETATE GETEATCTTT AAGATTAAGA CECAAGATEE GCACGCAAGA 3100
CTAGGGAATO TAGAGTTTCT CGAAGAGAAA CCATTAGTAG GAGAAGCGCT
AGCTCGTGTG AAAAGAGCGG AGAAAAAATG GAGAGACAAA CGTGAAAAAT 3200
TGGAATGEGA AACAAATATC GTTTATAAAG AGGCAAAAGA ATCTGTAGAT
GCTTTATTE TAAACTCTCA ATATGATCAA TTACAAGCGG ATACGAATAT 3300
TECCHTEATT CATECERCAE ATAAACETET TCATAECATT CEAGAAGETT
ATCTSCCTGA GCTGTCTGTG ATTCCGGGTG TCAATGCGGC TATTTTTGAA 3400
GARTTAGAAG GGCGTATTTT CACTGCATTC TCCCTATATG ATGCGAGAAA
TETCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500
AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT
CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600
TOGTGGCTAT ATCCTTCGTG TOACAGCGTA CAAGGAGGGA TATGGAGAAG

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120	GGAA (end HD-1).	COLOGHUNGU	BIGGHHI INC	10017913GA	

50. A process for preparing pesticidal chimeric toxin SYWI having the following amino acid sequence:

YNCLSNE VLGGERIE Æ VE MDNNPNINECIP Æ F G QFL S V F G S T L F' I D Ι S L L SQWDAFL Ε Q I. Q I Q R IFGP L Ν W G I S R L E G L S N L R E E M R I Q F N B S Y Ū Ι Υ Α Ε FR E W L MNS Α TΙ V O A A ML H R Y N D L T R D S R D W V R Ş ٧ F: ŢΙ ٧ S L L Ρ Υ Q V L I Τ D Y G ΝY FIGAATINSE Υ Ç. F RRE L Т N IR F S I Υ Y Ε V Q L I Τ D I V A G H A Q G S R S Ρ ΙŒ Ε NF G! ٧ SG Ι M Α S Ρ G I T IYT J-W S ର ହ ٧ AAP R I V Α Q L .G Ø G FT FPL I Ν Ν ର ପ L S ٧ L D G Т E F SSTL Т G ٧ Ľ S L \mathbf{D} Ε I Ρ Ρ Q L SSN R S G F S S S RQGFS ΜF Ν L F IIF S S Т I P 'A Ε C! Ø FSWQHR 5 I Т N Ν RR TS G G Ρ F TGGD ΙL S G TS V K G T L T F S YA TNL Ø V N I Α Q R YRVR I R S Т S I GRP Q N F S Α Τ M S S G S N Ç! D N PFN FVP S F Ē FTT S G SVF Α HVFΝ S G Ν Т L S IEF NQI Q K Α ٧ Ν Ε Ε T F Ε ΑE Y DL Ε R A Α V K TDV С L S Ţι Ε ٧ Ε Æ TDYHI D Q V S N L SDERN Q EL SEKÝ KHAKE Ε Q. L L D G ٧ TI 0.6 D D Ģ Ι R Q LDR GWRGST D I N, AY FDE CYP Τ ΥL Υ Ø K I DES K L K T G Т T S QDL E . I Y LIR Υ Ν AKH Ε ٧ Ν GKCG Ε G/S LD S Α 0 S P I EF NR C Α P.H L HHSHHF I Т C R G С Α 5 L D II V S С D Ε K K Т Q G Α R L G NL Ε K I D Н Ι F L G У ٧ D R Ε Κ L Ε W Ε W R K R VKR Α K Ή Α LV G D LF Q Y ŢΙ Ũ! L \mathbb{Q} Α Τ N DA V N S ٧ F YLPE LS I P G V N Α ΕA V VHSIR DARNVI G D K N TAF S L Υ Ε V L ٧ P WE G H V DV EE Q Ν Ν Q R S L N V KG С ٧ CPGRG ΥI L R ٧ T AYK Ε G Υ G Ε С L K S .N C VE Ε ΕI Y P NN Т V T TDE F SV T S RIN R G YNE Α F. S ٧ P D Y Α Υ Y. G G Α Q E VGY T ۴ NPCEFNRG YRD Υ RRE S Т G Υ \mathbf{D} YFPETDKVWIEIGETEGTF KEL Έ V T ELLLMEE

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which comprises culturing a prokaryotic microbe
hosting a recombinant DNA transfer vector, denoted
pSYW1, comprising DNA having the following nucleotide
sequence or equivalent nucleotide sequences containing
bases whose translated region codes for the same
amino acid sequence:

(start HD-73) ATG GATAACAATC 400 CGAACATCAA TGAATGCATT CCTTATAATT GTTTAAGTAA ØCCTGAAGTA GAAGTATTAG GTGGAGAAAG AATAGAAACT GGTTACACCC/CAATCGATAT 500 TTCCTTGTCG CTAACGCAAT TTCTTTTGAG TGAATTTGT/T CCCGGTGCTG GATTIGIGIT AGGACIAGIT GATATAATAT GGGGAATT/TT TGGICCCICT 600 CAATGGGACG CATTTCTTGT ACAAATTGAA CAGTTAATTA ACCAAAGAAT AGAAGAATTC GCTAGGAACC AAGCCATTTC TAGATYAGAA GGACTAAGCA 700 ATCTTTATCA AATTTACGCA GAATCTTTTA GAGAØTGGGA AGCAGATCCT ACTAATCCAG CATTAAGAGA AGAGATGCGT ATTÉAATTCA ATGACATGAA 800 CAGTGECETT ACAACEGETA TIECTETTIT TECAGTICAA AATTATEAAG TIECTETTIT ATEAGTATAT GITCAAGETTE CAAATTTACA TITTATEAGTI 900 TTGAGAGATG TTTCAGTGTT TGGACAAGG TGGGGGATTTG ATGCCGCGAC TATCAATAGT CGTTATAATG ATTTGACTAG GCTTATTGGC AACTATACAG 1000 ATTATGCTGT ACGCTGGTAC AATACGG#AT TAGAACGTGT ATGGGGACCG GATTCTAGAG ATTGGGTAAG GTATAATCAA IJTAGAAGAG AATTAACACT 1100 AACTGTATTA GATATCGTTG CTOTGTTCCC GAATTATGAT AGTAGAAGAT ATCCAATTCG AACAGTTTCC CAATTAACAA GAGAAATTTA TACAAACCCA 1200 AGGAAGTATT AGGAGTCCAC ATTTGATGGA TATACTTAAC AGTATAACCA 1300 TCTATACGGA TGCTCATAAA ØGGGAATATT ATTGGTCAGG GCATCAAATA ATGGCTTCTC CTGTAGGGTT/ TTCGGGGCCA GAATTCACTT TTCCGCTATA 1400 TGGAACTATG GGAAATGCAG CTCCACAACA ACGTATTGTT GCTCAACTAG GTCAGGGCGT GTATAGA#CA TTATCGTCCA CTTTATATAG AAGACCTTTT 1500 AATATAGGGA TAAATAÁTCA ACAACTATCT GTTCTTGACG GGACAGAATT TGCTTATGGA ACCTÇCTCAA ATTTGCCATC CGCTGTATAC AGAAAAAGCG 1600 GAACGSTAGA TTCØCTGGAT GAAATACCSC CACAGAATAA CAACGTGCCA CCTAGGCAAG GAXTTAGTCA TCBATTAAGC CATGTTTCAA TGTTTCGTTC 1700 AGGCTTTAGT AÁTAGTAGTG TAAGTATAAT AAGAGCT (end hd-73) (start /HI-1) CCAACGT TTTCTTGGCA GCATCGCAGT 1900 GETGAATITA ATAATATAAT TEETTEATEA CAAATTACAE AAATACETTT AACAAAATØT ACTAATCTTG GCTCTGGAAC TTCTGTCGTT AAAGGACCAG 2000 GATTTAÇÃGG AGGAGATATT CTTCGAAGAA CTTCACCTGG CCAGATTTCA ACCTTAÁGAG TAAATATTAC TGCACCATTA TCACAAAGAT ATCGGGTAAG 2100 AATTOGCTAC GCTTCTACTA CAAATTTACA ATTCCATACA TCAATTGACG GAADACCTAT TAATCAGGET AATTTTTCAG CAACTATGAG TAGTGGGAGT 2200 AAYTTACAGT CCGGAAGCTT TAGGACTGTA GGTTTTACTA CTCCGTTTAA C/TTTCAAAT GBATCAAGTG TATTTACGTT AAGTGCTCAT GTCTTCAATT 2300 **ØAGGCAATGA AGTTTATATA GATCGAATTG AATTTGTTCC GGCAGAAGTA** ACCTTTGAGG CAGAATATGA TTTAGAAAGA GCACAAAAGG CGGTGAATGA 2400 GCTGTTTACT TCTTCCAATC AAATCGGGTT AAAAACAGAT GTGACGGATT ATCATATTGA TCAAGTATCC AATTTAGTTG AGTGTTTATC AGATGAATTT 2500 TGTCTGGATG AAAAACAAGA ATTGTCCGAG AAAGTCAAAC ATGCGAAGCG ACTTAGTGAT GAGCGGAATT TACTTCAAGA TCCAAACTTC AGAGGGATCA 2600 ATAGACAACT AGACCGTGGC TGGAGAGGAA GTACGGATAT TACCATCCAA

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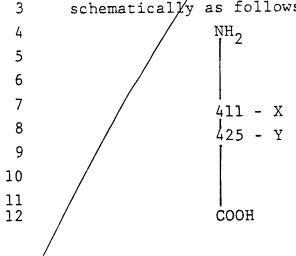
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GBAGGCGATG ACGTATTCAA AGAGAATTAC GTTACGCTAT TGGGTACCTT 2700
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TAAAAGCCTA TACCCGTTAT CAATTAAGAG GGTATATCGA AGATAGTCAA 2800
GACTTAGAAA TCTATTTAAT TCGCTACAAT GCAAAACATG AAACAGTAAA
TGTGCCAGGT ACGGGTTCCT TATGGCCGCT TTCAGCCCAA AGTCCAATCG 2900
GAAAGTGTGG AGAGCCGAAT CGATGCGCGC CACACCTTGA ATGGAATCCT
GACTTAGATT GTTCGTGTAG GGATGGAGAA AAGTGTGCCC ATCATTCGCA 3000
TCATTTCTCC TTAGACATTG ATGTAGGATG TACAGACTTA AATGAGGACC
TAGGTGTATG GGTGATCTTT AAGATTAAGA CGCAAGATGG GCACGCAAGA 3100
CTAGGGAATC TAGAGTTTCT CGAAGAGAAA CCATTAGTAG GAGAAGCGCT
AGCTCGTGTG AAAAGAGCGG AGAAAAAATG GAGAGACAAA ÇGTGAAAAAT 3200
TGGAATGGGA AACAAATATC GTTTATAAAG AGGCAAAAGA/ATCTGTAGAT
GCTTTATTTG TAAACTCTCA ATATGATCAA TTACAAGCGG ATACGAATAT 3300
TGCCATGATT CATGCGGCAG ATAAACGTGT TCATAGCA/T CGAGAAGCTT
ATCTGCCTGA GCTGTCTGTG ATTCCGGGTG TCAATGCSGC TATTTTTGAA 3400
GAATTAGAAG GGCGTATTTT CACTGCATTC TCCCTA/TATG ATGCGAGAAA
TETCATTAAA AATGGTGATT TTAATAATGG CTTATCCTGC TGGAACGTGA 3500
AAGGGCATGT AGATGTAGAA GAACAAAACA ACCAACGTTC GGTCCTTGTT
CTTCCGGAAT GGGAAGCAGA AGTGTCACAA GAAGTTCGTG TCTGTCCGGG 3600
TEGTGGETAT ATECTTEGTG TEACAGE AT CAAGGAGGGA TATGGAGAAG
GTTGCGTAAC CATTCATGAG ATCGAGAACA ATACAGACGA ACTGAAGTTT 3700
AGCAACTGCG TAGAAGAGGA AATCTATCCA AATAACACGG TAACGTGTAA
TGATTATACT GTAAATCAAG AAGAATACAG AGGTGCGTAC ACTTCTCGTA 3800
ATCGAGGATA TAACGAAGCT CCTT/CCG/TAC CAGCTGATTA TGCGTCAGTC
TATGAAGAAA AATCGTATAC AGATGGACGA AGAGAGAATC CTTGTGAATT 3900
TAACAGAGGG TATAGGGATT ACACCCCACT ACCAGTTGGT TATGTGACAA
AAGAATTAGA ATACTTCCCA GAAACQGATA AGGTATGGAT TGAGATTGGA 4000
GAAACGGAAG GAACATTTAT CG/ GGACAGC GTGGAATTAC TCCTTATGGA
GGAA (end HD-1).
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51. A chimeric toxin, having the amino acid sequence of toxin EW3, with changes which can be shown schematically as follows:



1 2

wherein X is one of the 20 common amino acids

except Asp when the amino acid at position 425 is

Gly; Y is one of the 20 common amino acids except

Gly when the amino acid at position 411 is Asp.

52. A chimeric toxin, having the amino acid sequence of toxin EW3, with changes which can be shown schematically as follows:

NH₂
289 - X
311 - Y
313 - Z

wherein X is one of the 20 common amino acids except Arg when the amino acid at position 311 is Arg and the amino acid at position 313 is Tyr; Y is one of the 20 common amino acids except Arg when the amino acid at position 289 is Arg and the amino acid at position 313 is Tyr; and Z is one of the 20 common amino acids except Tyr when the amino acid at position 289 is Arg and the amino acid at position 289 is Arg and the amino acid at position 311 is Arg.

- 53. DNA encoding a chimeric toxin as shown in claim 51.
- 54. DNA encoding a chimeric toxin as-shown in claim 52.

1	55. A recombinant DNA transfer vector comprising
2	DNA encoding a chimeric toxin as shown in claim 51.
1	56. A recombinant DNA transfer vector comprising
2	DNA encoding a chimeric toxin as shown in claim 52.
ā	57 A chimemia towin comprising the warishle
1	57. A chimeric toxin comprising the variable
2	region or regions of two or more <u>Bacilius</u> toxins.
1	58. A toxin, according to claim 57, wherein the
2	Bacillus toxins are B. thuringiensis toxins.
2	Bactitus coains are <u>s. enarmageore</u>
1	59. A toxin, according to claim 58, wherein the
2	B. thuringiensis toxins are B. thuringiensis var.
3	kurstaki HD-1 toxin and By thuringiensis var. kurstaki
4	HD-73 toxin.
1	60. A toxin, according to claim 58, wherein
2	the B. thuringiensis toxins are encoded by a pesticide-
3	producing strain of Bacillus thuringiensis, consisting
4	of B. thuringiensis M-7, B. thuringiensis var. kurstaki,
5	B. thuringiensis var. finitimus, B. thuringiensis var.
6	alesti, B. thuringiensis var. sotto, B. thuringiensis
7	var. <u>dendrolimus</u> , <u>B</u> . <u>thuringiensis</u> var. <u>kenyae</u> , <u>B</u> .
8	thuringiensis var. galleriae, B. thuringiensis var.
9	canadensis, B. thuringiensis var. entomocidus, B.
10	thuringiensis var. subtoxicus, B. thuringiensis var.
11	aizawai, B. thuringiensis var. morrisoni, B. thuringiensis
12	var. ostriniae, B. thuringiensis var. tolworthi, B.
13	thuringiensis var. darmstadiensis, B. thuringiensis
14	var. toumanoffi, B. thuringiensis var. kyushuensis, B.
15	thuringiensis var. thompsoni, B. thuringiensis var.
16	pakistani, B. thuringiensis var. israelensis, B. thurin-

giensis var. indiana, B. thuringiensis var. dakota,

18	B. thuringiensis var. tohokuensis, B. thuringiensis
19	var. kumanotoensis, B. thuringiensis var. tochigiensis,
20	B. thuringiensis var. colperi, B. thuringiensis var.
21	wuhanensis, B. thuringiensis var. tenebrionis, B.
22	thuringiensis var. thuringiensis, and other Bacillus
23	species selected from <u>B</u> . <u>cereus</u> , <u>B</u> . <u>moritai</u> , <u>B</u> .
24	popilliae, B. lenzimorbus, and B. sphaericus.